Certificates Count:

An Analysis of Sub-baccalaureate Certificates

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EXECUTIVE SUMMARY

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Since President Obama took office, he has repeatedly called for the United States to significantly improve its postsecondary education performance. One goal in particular has gained wide attention: the President's declaration that in an ever more competitive global marketplace, the United States must once again lead the world in college attainment, challenging Americans to complete at least one year of education past high school.

Completion is the key when it comes to advanced education. To fully enjoy the benefits of higher knowledge and skills, one must graduate. Dropping in for a couple of courses at the local campus rarely makes much of a difference for long-term student success. Therefore, it is vitally important that states ensure that students have the opportunity to pursue the full range of higher education pathways that not only increase the likelihood of college completion, but also landing good careers.

A too often underutilized strategy – but one that can deliver greater income returns than associate and even some bachelor's degrees – is certificates. And for students balancing the jobs they must have with the advanced education they desire – a situation faced by most American college students today – completing a certificate can be the most direct path to college completion and career success.

Against this backdrop, *Certificates Count: An Analysis of Sub-baccalaureate Certificates* calls attention to the significant value of certificate programs – practical and often underutilized credentials that can provide graduates with an appealing combination of rapid postsecondary achievement and portable skills and knowledge. Certificates can position graduates for immediate workforce success, while establishing solid foundations for future academic achievement. For these reasons, *Certificates Count*, advocates for a national goal to double the number of long-term certificates produced within the next five years, and then double that number again over the subsequent five years.

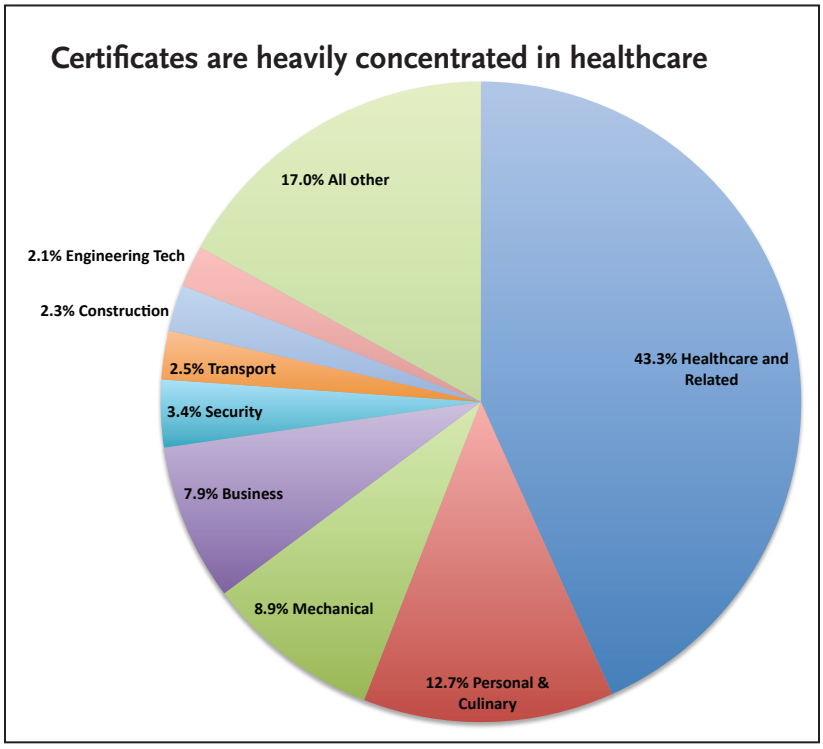
However, this study does not simply advocate the expansion of certificates on an across-the-board basis. It draws attention to important distinctions between certificate programs: length of program, subjects studied, program quality, and availability by geographical region.

For certificates to make a decisive contribution to U.S. postsecondary preparedness, states and institutions must ensure that certificate programs are of high quality, rigorous enough to have real value, tailored to the job market, widely available, and designed for timely completion.

What are certificates and who earns them?

Certificates, sometimes known as technical certificates or technical diplomas, are credentials issued by educational institutions that indicate completion of a discrete program of study or series of courses. The most popular programs, making up some 43 percent of all certificates, are in healthcare. Fields like business and technology also attract large numbers of students, who are generally eligible for federal and state financial aid.

About 750,000 certificates were awarded in 2007-2008, the most recent year for which data are available. That num-



Some definitions: Certificates are awarded by educational institutions to indicate completion of a program of study that does not culminate in a degree. Sub-baccalaureate certificates come in three categories based on length of study:

- Certificates for programs designed for completion in less than one academic year;
- Certificates for programs designed for completion in at least one but less than two academic years; and,
- Certificates for programs designed for completion in at least two but less than four academic years.

Certificates are not the same as *certifications* or *licenses*, which are typically awarded by third party, standard-setting bodies (not academic institutions), based on an assessment process that recognizes competencies in a particular occupational specialty as measured against a set of standards. Public-regulated bodies at the state or local level may grant licenses; private parties award most certifications. Individuals may or may not prepare for certification or licensure tests through academic study and they are only infrequently tied to academic awards.

ber represents a modest increase over the past decade (but a decline from the one million-plus certificates that were awarded in 1992-1993, before a regulatory crackdown on unscrupulous practices by some trade schools). A little more than half of all certificates are awarded by public sector institutions, mostly community colleges. About four in ten are granted by for-profit institutions.

On the demographic front, women account for close to two-thirds of certificate-holders. Certificates are also particularly appealing to black and Hispanic students, who earn about one-third of all certificates, compared to 20 percent of all bachelor's degrees. As with overall certificate numbers, there is a substantial gender imbalance among minorities, with black and Hispanic men earning less than half the number of certificates received by minority women.

A national goal to double the number of long-term certificates produced within the next five years, and then double that number again over the subsequent five years

Certificate programs vary enormously in length. Some require less than one academic year of study. Others take a year or longer to complete for students enrolled full time. A modest number of programs, accounting for less than 5 percent of all certificate awards, take two to four years of full-time study to complete. In recent years, there has been rapid growth in the awarding of short-term certificates, which have increased by 40 percent since 1997-98. Longer-term certificate during the same period have grown by 18 percent.

The certificate payoff

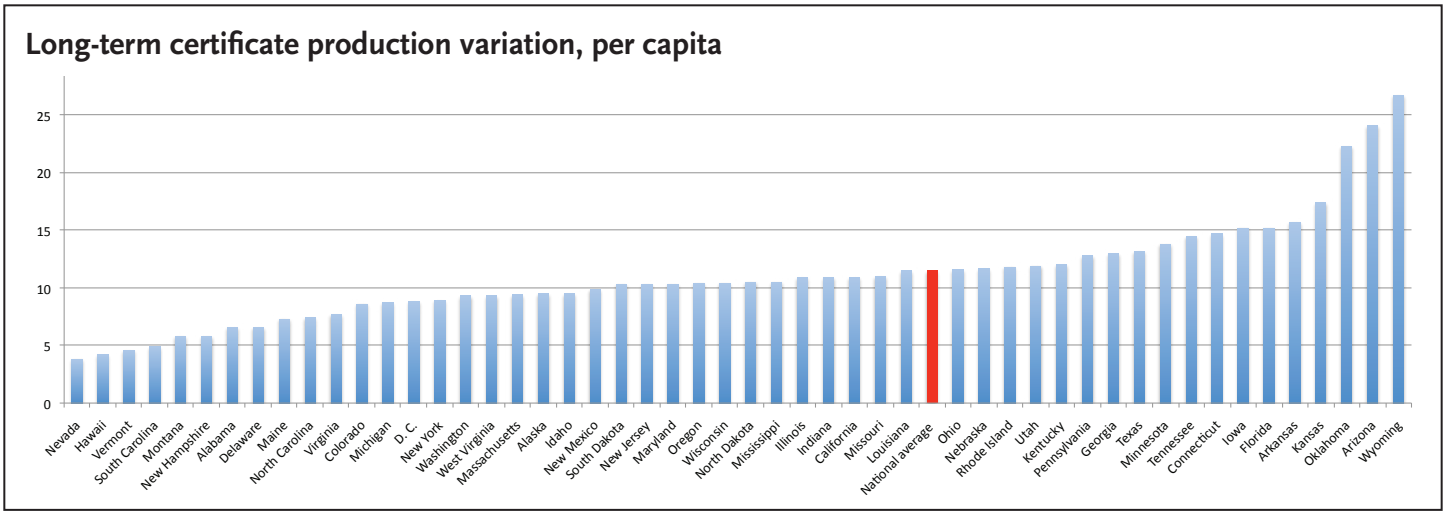
Economists and policymakers increasingly agree on the importance of human capital to economic advancement, both for individuals and for nations. This consensus is driven in part by research showing the labor market returns to even one additional year of schooling are significant.

However, very little research has focused specifically on sub-baccalaureate credentials, and the findings that do exist on the economic benefits of certificates do not distinguish between programs of different lengths. At the state level, research on the value of certificates is also imperfect because many states simply do not make a routine practice of analyzing the labor-market payoff of credentials issued by any post-secondary institutions within their borders.

Fortunately, some states do gather this data and have produced significant findings about the earnings returns to certificates. Their broad conclusion is this: overall, high quality certificate programs can significantly boost the likelihood of student academic and career success.

This state-level research clearly shows, however, that all certificates are not created equal. Long-term certificates have significantly higher labor market value than short-term certificates because of their greater technical and academic rigor, and because of the wider range of job-related skills they provide graduates. Certificates of one year or more are consistently linked to increased earnings. Moreover, individuals who complete long-term programs of study make significantly more money than those who enroll in these programs but do not complete them. By contrast, students who complete short-term certificates do not earn much more than those who enroll in such programs but do not complete them.

Research in Kentucky, for example, found that increases in average income for those who earned certificates of at



least one year were nearly identical to returns from associate degrees: almost 40 percent for women and around 20 percent for men. However, short-term certificates resulted in a much smaller increase. Men who completed certificate programs lasting less than one year earned about 10 percent more than those who did not complete, while the earnings advantage for women in these short-term programs was only about 3 percent.

Field of study is also tightly correlated with the labor-market returns of certificates. All of the national and state level research indicates that longer-term certificates in virtually all areas of nursing and allied healthcare produce the strongest returns. Certificates in technology, construction trades, and mechanic and repair trades also produce positive returns. By contrast, certificates in service occupations and the humanities do not yield consistently positive returns.

In some fields the median earnings of long-term certificate earners are equal to, or higher than, those who have obtained associate degrees, particularly when those associate degrees are in non-occupational fields and students who earned the credential did not go on to complete a bachelor's degree. Field of study is also important for short-term certificates, but because earnings outcomes are not strongly positive, the relative returns by field are not nearly as consequential as at the long-term certificate level.

Long-term certificates have one additional advantage: they can be completed quickly, particularly in colleges that are focused exclusively on certificate programs. Those institutions report completion rates two or three times faster than at colleges that offer both associates degrees and certificates. This may be attributable in part to highly structured "built-for-completion" program organization in certificate-only colleges that tend to work more effectively for students with time and economic pressures.

An under-utilized credential

Given what we know about how much more long-term certificates add to a graduate's earning power than short-term credentials, the rapid growth of short-term awards in recent years is troubling. Short-term rewards may be helpful in updating the skills of adult workers who are well launched in their occupations and who have good earnings history. But there is much room for skepticism about their labor market value for young adults, or for older and dislocated workers seeking to start a new occupation.

Policymakers and practitioners should also be concerned about the seemingly haphazard nature of the way states approach certificate production. There is striking variation among the states in total certificate awards relative to the population: Georgia, Kentucky, Wisconsin, Arizona, and Kansas produce 10 to 15 times as many certificates on a per-capita basis as do Hawaii, Nevada, Montana, and every state in the Northeast.

Certificates of one year or more are consistently linked to increased earnings

There is similarly wide variation among the states in the length of certificates produced. Indeed, the reason Kentucky, Louisiana, and Illinois are among the largest producers of certificates on a per capita basis is that they produce large numbers of less valuable short-term credentials. Wyoming, Oklahoma, and Arkansas produce mostly longer-term certificates. Arizona, Kansas, and Florida stand out as leaders in per capita certificate production both for programs of all lengths and for longer-term programs.

Some of this variation may be attributed to structural

differences in the economies of these states. It may be that some regional economies in the Northeast states of New York, New Jersey and Connecticut, for example, do not offer as many employment opportunities for certificate completers as might be the case in other states. But institutional culture and state policy probably play an even more significant role than economic factors. Differences in community college certificate offerings, both in numbers and in fields of study, even within the same state, suggest that program offerings may have less to do with labor market needs than with the interests of faculty or college leadership and the inertia of resource-allocation practices.

Conclusion and Recommendations

Complete College America believes that to significantly boost America's postsecondary graduation rate we must reinvent higher education to meet the needs of the new majority of students. These learners must balance the jobs they need with the education they desire.

Certificates are an important part of the solution. There is good reason to believe that expanded access to proven certificate programs of one year or more can help states build skilled workforces and boost wages. Yet there is wide variation among the states in certificate production, overall, by sector, and especially among community colleges. While many states effectively use certificates as part of a broad-based public post-secondary education strategy, most could do better.

To maximize the potential certificates hold for helping individuals and securing America's competitiveness, *Certificates Count* makes the following recommendations:

1. Count certificates toward attainment goals. Subbaccalaureate certificates of a year or more offer underappreciated and undeveloped potential to contribute to national, state, and college-level targets for educational attainment and skills development. To truly fulfill this potential, they need to be counted toward attainment goals. They should also be defined consistently and counted on a uniform basis.

2. Set aggressive goals. The federal government and the states should set aggressive goals for long-term certificate production and help colleges meet them. Some states that award comparatively few long-term certificates may be able to quickly and significantly ramp up production of these certificates. The United States should double the number of long-term certificates produced within the next five years, and then double that number again over the subsequent five years.

3. Reward long-term certificates. States should use funding formulas and other policy incentives to support robust certificate programs of one year or more. Shorter-term programs that lack significant labor-market payoffs should be discouraged.

4. Collect outcomes data, and promote labor-market alignment and consistent program offerings. States should collect and rigorously analyze data on labor market returns to certificates, and provide effective external oversight of certificate programs to ensure that these credentials have direct relevance to high-demand occupations. States should also promote greater consistency in program offerings and content in community college certificate programs. Today, major differences in programs are confusing to students and prospective employers, and create barriers to the kind of careful outcomes assessment that could improve program performance.

5. Focus on program completion. Federal and state policymakers should work with colleges to significantly improve certificate completion rates. "Built-for-completion" programs are a promising model because their course schedules and enrollment options are focused tightly on the needs of students. Program completion could also be improved with better alignment between certificate programs and associate degree programs.

None of these recommendations by itself will fully maximize the value of certificates. But taken together these measures would go a long way toward expanding the number of high-quality, practical, and valuable credentials earned by American students, and making the United States once again the leader in postsecondary attainment.

Introduction

In 2009, Complete College America commissioned FutureWorks to undertake a quantitative and qualitative assessment of the production, content, and value of sub-baccalaureate certificates – value to those who gain them, to the institutions that award them, and to the regional and national economies. This study informs policy dialogues about evolving national and state goals for postsecondary attainment and how to measure progress toward those goals. It also offers guidance to policy-makers and practitioners in strengthening the content and value of certificate programs.

In his February 24, 2009 address to Congress, President Obama asked "…every American to commit to at least one year or more of higher education or career training." The President suggested this postsecondary preparation could be at a community college or a four-year school, vocational training, or an apprenticeship, but he insisted that an increasingly competitive economy means that every American will need to get more than a high school diploma.

Subsequently, the President has called for achieving global leadership in postsecondary attainment by 2020, a broad goal that has led to rich debate about how best to set qualitative targets, how to assure quality, and how to understand the relative value of different kinds of postsecondary credentials. Out of this debate, there emerges a wide consensus about the need for more information and greater clarity about sub-baccalaureate credentials generally and certificates specifically. This report aims to help meet this need.

Some Definitions: Most commonly referred to simply as "certificates," these postsecondary awards are also known as "technical certificates" or in some states as "technical diplomas." They refer to credentials issued by educational institutions that are not degrees but that do indicate completion of a discrete program of study or series of courses with a specific focus. Some postsecondary institutions require an end-of-program assessment or demonstration of mastery as a condition of award but most simply require a more conventional examination of knowledge and skills gained course-by-course, as would be the normal case for postsecondary degrees.

All the data summarized here is from the Integrated Postsecondary Education Data System (IPEDS), a system of inter-related surveys gathering information annually from all postsecondary institutions participating in federal student financial aid programs financed under Title IV of the Higher Education Act. Administered by the federal Department of Education, IPEDS divides sub-baccalaureate certificates into three categories as follows:[1]

- *Certificates of less than one academic year:* Require completion of an organized program of study at the postsecondary level (below the baccalaureate degree) that, with full-time enrollment, can generally be completed in less than one academic year (two semesters or three quarters) or in less than 900 contact hours by a student enrolled full-time;
- *Certificates of at least one but less than two academic years:* Require completion of an organized program of study at the postsecondary level (below the baccalaureate degree) that, with full-time enrollment, can generally be completed in at least one but less than two full-time equivalent academic years, or designed for completion in at least 30 but less than 60 semester credit hours, or in at least 900 but less than 1,800 contact hours;
- *Certificates of at least two but less than four academic years:* Require completion of an organized program of study at the postsecondary level (below the baccalaureate degree) that, with full-time enrollment, can generally be completed in at least two but

[1] IPEDS also recognizes post-baccalaureate certificates (18 semester credit hours past the bachelor's degree) and post-master's certificates (24 semester credit hours past the master's degree) but they are not included in the scope of this study.

Examples of Certificate Programs:	Program Length	Average Salary after 5 Years
Business Certificates		
Administrative Professional AAS degree	66 credit hours	$26,000
Office support specialist	33 credit hours	$21,000
Office Aide	16 credit hours	$21,000
Health Care Certificates		
RN nursing	77 credits	$46,000
Practical Nursing	35 credits	$32,000
Nursing Assistant (CNAs)	5 credits	$21,000

less than four full-time equivalent academic years, or designed for completion in at least 60 but less than 120 credit hours, or in at least 1,800 but less than 3,600 contact hours. There are not many of these programs and some states have none. There used to be more but now they account for only 4.2 percent of all certificate awards. In some of the data synthesis that follows, they are included with the one-to-two-year awards.

Most certificate programs are eligible for most federal and state student financial aid programs. For overall Title IV eligibility, they must be accredited by an authority approved by the Department of Education and prepare students for gainful employment in a recognized occupation. For Pell Grant eligibility, programs must be at least 16 semester hours or their equivalency but programs of at least 8 semester hours are eligible for Title IV loans. Typically, state eligibility guidelines mirror the federal requirements, but this is not always the case and sometimes certificate programs are not eligible for state awards.

Some Limitations of IPEDS Data: Analysis of certificate awards and their economic value to individuals and regional economies is made difficult by the IPEDS reporting criteria and by the widely divergent certificate award policy and practices among colleges (and sometimes even within colleges). Colleges report individually to IPEDS, usually without state-level oversight, and, even with detailed instructions and monitoring from the Department of Education, reporting practices can differ so that state totals might not always reflect precisely the same data. Award criteria can vary widely among programs in a particular institution and across institutions in ways that can sometimes frustrate data collection and comparison and limit assessment of labor market returns.

Even if all reporting carefully adhered to all guidelines there would remain some ambiguities. Most importantly, length of study varies greatly within the IPEDS-reported certificate award categories, far more than is the case for other postsecondary awards. Virtually all associate and bachelor's degrees require nearly the same length of formal preparation. Associate degrees almost always require 60 to 65 semester credit hours of study and bachelor's degrees almost always require about twice that much, about 120 semester credit hours. While some students might end up taking some courses that do not count toward their major, most degrees nonetheless represent similar lengths of study. From institution to institution and across majors within institutions, there is seldom a variation of more than 10 percent, even at the margins.

Certificate programs, on the other hand, are far more variable in length. Awards for programs of anywhere from 30 semester hours to 59 semester hours are all reported to IPEDS as "one-to-two-year awards." In fact, many of these awards require almost as much formal preparation as do associate degrees. In most states and most colleges, most of the one-to-two-year awards are for programs that actually average around 45 credit hours. Also, some colleges do not try to distinguish, when they report to IPEDS, programs of 30 to 59 semester hours from those of 900 to 1,800 clock hours. They might title all such programs as "technical diplomas," for example, and report them in the one-to-two year category.

There is even greater variation among awards for programs of less-than-one-year. They can be for as short as one or two three-credit semester hour courses or for as long as 29 semester hours. Some of the most popular certificate programs in fact are very short-term. For example, in many states, the largest single less-than-one-year certificate program is for nursing aides or certified nursing assistants – programs that can range from a federally enforced minimum of 75 classroom hours (5 or 6 semester credit hours) to as much as 12 to 15 semester hours. In most states, most of the less-than-one-year awards are for programs that average around 15-20 credit hours.

This wide variation in the length of short-term programs and the length of long-term programs underscores the difficulty of generalizations about certificates, especially (as will be discussed at some length later in this report) in assessing their labor market returns.

Title IV establishes "institutional eligibility" and addition-

al "program eligibility" requirements that strongly influence the length of certificate programs. A school qualifies for Title IV as an *institution of higher education* if (in addition to meeting all other eligibility requirements, including being a nonprofit school) it offers a program that leads to an associate, bachelor's, professional, or graduate degree. Under this category of institutional eligibility, a college may offer a program of at least one academic year in duration that leads to a certificate. But, to be eligible for Title IV funding, any such program must "prepare students for gainful employment in a recognized occupation" and must be included under the notice of accreditation from a nationally recognized accrediting agency.

Institutions may also qualify for Title IV as a *proprietary or a postsecondary vocational institution.* For-profit institutions and non-degree granting institutions can qualify for Title IV only under this category. To be eligible for federal financial aid support, certificate-oriented programs offered by such an institution must be included under the notice of accreditation from a nationally recognized accrediting agency, prepare students for gainful employment in a recognized occupation, and meet strict length requirements. To be eligible for Title IV grants and loans, a program must provide at least 600 clock hours, 16 semester hours, or 24 quarter hours of instruction over at least a 15-week period. However, for Title IV loan eligibility alone, a program could provide as few as 300 clock hours (8 semester hours or 12 quarter hours) over at least a 10-week term. The institution must verify that these 300 to 600 clock hour programs meet completion and placement rates of at least 70 percent. The institutions do not have to report their rates but they must verify adherence to these minimum thresholds in their annual Title IV compliance audit and keep such documentation on file. These very short programs also may not be more than 50% longer than the minimum training period required by the state or federal agency, if any, for the occupation for which the program of instruction is intended, and they must have been in existence for at least one year.

When a college that qualifies for Title IV as an *institution of higher education* chooses to provide certificate-oriented programs of less than one year they must effectively qualify also as a *proprietary or a postsecondary vocational institution.* They are then subject to the same program eligibility requirements as summarized immediately above. Most public community colleges offer certificate programs of less than one year and therefore are subject to these program eligibility requirements.

Many Title IV-eligible institutions sometimes offer some programs which are not Title IV eligible, simply because they are too short or may not be covered by their accreditation. Unfortunately, when they report awards to IPEDS, the institutions more frequently than not include data about completions of the non-Title IV eligible programs with award data for programs that are Title IV eligible.

In federal reporting under IPEDS, there is nothing to distinguish the 300 to 600 clock hour programs from 600 to 900 clock hour programs, even though that separation would seem to be feasible and useful for program monitoring and assessment. Most institutions probably are able to distinguish, within their own record systems, between awards for completion of Title IV grant and loan-eligible programs and those for completion of loan-only eligible programs. In fact, it would seem reasonable that, having established minimum standards for programs to be eligible for federal student grant aid, the Department of Education would seek to gather the data that could permit analysis about how these criteria effect the number and types of certificates awarded.

Another complication to analysis and comparison is that some colleges occasionally embed short-term certificates within long-term certificate and degree programs such that, on a path toward a certificate or degree, a student may acquire a few other lesser or more specialized "component" certificates. The IPEDS reporting system effectively counts certificates awarded, not individuals receiving certificates. This obviously makes difficult the analysis of labor market returns to those shorter-length certificates as opposed to the longer-length credentials of which they may be a part. In this way, these short-term certificate awards are not so much a measure of educational attainment as an indicator of competency in a particular and usually narrow range of occupationally relevant skills.

Further, some colleges award very short-term certificates only on a non-credit basis or make them available on a non-credit basis as well as on a for-credit basis. IPEDS instructs Title IV-eligible institutions to report only those certificates that are awarded for completion of for-credit programs, but, anecdotally at least, it appears that some colleges report all certificate awards even if they are not provided for credit.

One further caution: Certificates are not the same as *certifications*, which are typically awarded by third party, standard-setting bodies (not academic institutions), based on an assessment process that recognizes competencies in a

particular occupational specialty as measured against a set of standards, usually set through an industry-wide process. Individuals may or may not prepare for certification tests through academic study and certifications are only infrequently tied to academic awards. There is very wide diversity in certifications awards in the scope and depth of competencies measured, in the number of businesses involved in any particular certification process, and in the testing process. There is no federal reporting requirement for certifications, no national system of voluntary reporting, and most industry groups do not publish or otherwise make available information about certifications they award. This report makes no attempt to summarize data about certifications or to reach conclusions about their education or labor market value.

Nor is a certificate the same as a *license*. In some professions, admission to an occupation that includes activities that might be seen as dangerous or that involve a high degree of specialized skill will require a license to practice. The license to practice usually requires examination by a licensing board of experienced practitioners and frequently requires that the applicant complete a prescribed course of study and present a certificate or degree attesting to successful completion of that program. Licensure differs from certification in that it is a legal requirement and licensing boards are subject to public oversight, usually by state or local government authorities. However, licensing standards and procedures often different differ from one state to another. As with certifications, there is no federal reporting requirement for most licensing, no national system of voluntary reporting, and licensure bodies typically do not publish or otherwise make available information about licenses they issue. Again, this report makes no attempt to summarize data about certifications or to reach conclusions about their value.

Outline of this report

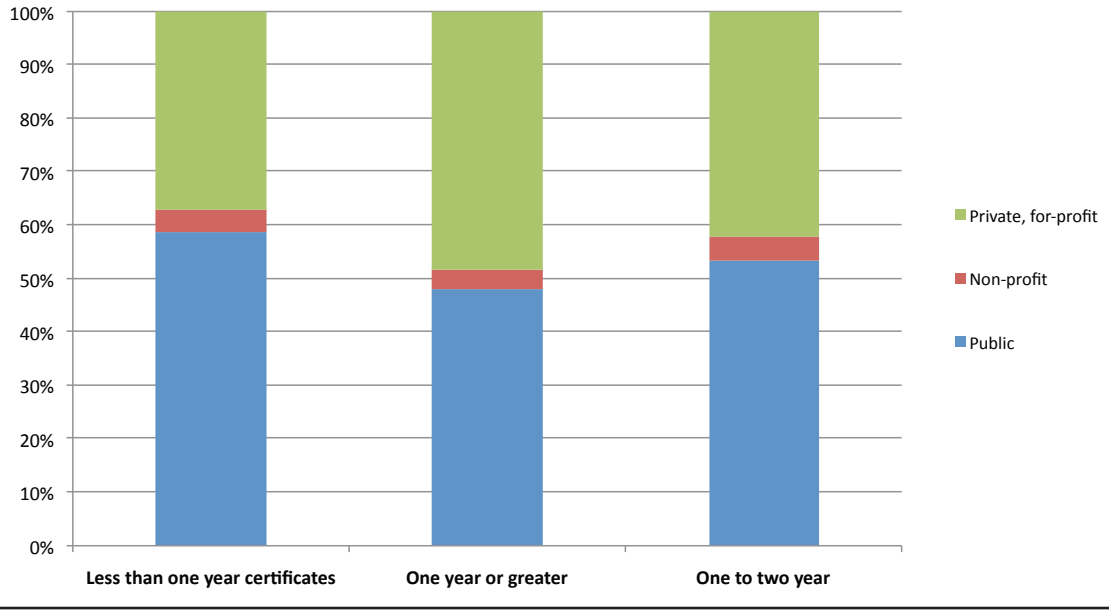
This report is divided into three sections. Section I summarizes the current status and major trends in certificate awards. Section II reviews national and state-level studies that help to measure the economic returns to certificates. Section III summarizes key findings from this work and offers recommendations for policy-makers and practitioners.

Section I: Status and Trends in Certificate Awards: Findings From National Level Data

Total Awards: In 2007-08 (the most recent year for which detailed data is available from IPEDS), Title IV-approved institutions[2] awarded 749,883 certificates of all lengths (see Appendix 1). Of these, 53.6 percent (402,267) were awarded for programs of less than one academic year, 42.2 percent (316,278) were awarded for programs more than one but less than two academic years, and 4.2 percent (31,7338) were awarded for programs of more than two but less than four academic years. In 2007-08, the number of certificates awarded was nearly identical to the number of associate degrees granted (750,164).

Awards by Sector: In 2007-08, public institutions, degree and non-degree granting, awarded slightly more than half of all certificates – awarding 58.8 percent of less than one year certificates, 48.0 percent of those of one to two years, and 34.3 percent of those representing two to four years. Private non–profit institutions are not a major producer of certifications of any length, accounting for less than 5 percent of the total. For-profit institutions, on the other hand, are major players, producing 37.0 percent of the less-than-one-year certificates and about 48.2 percent of the one-to-two-year certificates. Within the for-profit sector, non-degree granting (but still Title IV-approved) institutions dominate, awarding almost 30 percent of all certificates.

Chart 1: Certificate Awards by Sector



As is clear from Chart 1 (and Appendix 1), while all sectors of postsecondary produce certificates, two groups predominate in certificate awards – public, two-year degree-granting (*i.e.*, community colleges) and for-profit, non-degree-granting career colleges. These two sectors produce over 70 percent of all certificate awards. However, while for-profit career colleges are often stereotyped as major producers of short-term awards, in fact they produce slightly more long-term awards (one-to-two-years and two-to-four-years) than short-term awards and they have held steady at that balance for the past 15 years. Community colleges, on the other hand, skew far more toward short-term awards and have sharply trended toward shorter-term awards over the past two decades. In 1987-88, only 33 percent of certificate awards from community colleges were for short-term programs of less than one year. This steadily increased to 39 percent in 1992-93, 46 percent in 1997-98, 58 percent in 2002-03, and 62 percent in 2007-98. This trajectory in community colleges away from longer-term certificates toward shorter-term ones seems problematic in that there is little evidence of significant labor market returns to short periods of study even if they result in a certificate. (See the more detailed discussion of this issue in Section 2 of this report.)

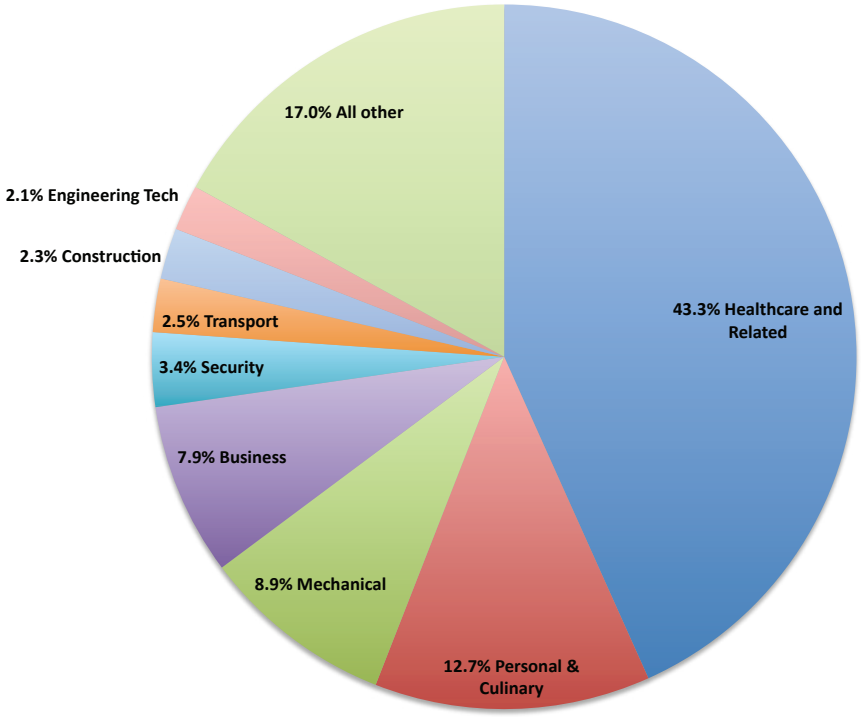
Certificates by Program: As is evident from the data in Chart 2 (and Appendix 2), a preponderance of sub-baccalaureate certificates, of all lengths and from all institutions, are for health professions and health-related sciences. In 2007-08, healthcare and related programs' share of all certificates from all Title IV institutions was 43.0 percent – slightly below that level for degree-granting institutions and slightly above it for non-degree granting institutions.

The non-degree granting institutions (which are predominately private for-profit institutions[3]) tend to be sharply

[2] In the 50 states plus the District of Columbia.

[3] In 2008, IPEDS counted 2,379 non-degree-granting institu-

Chart 2: Certificates are heavily concentrated in healthcare



focused on a relatively small number of programs. Of all the certificates they issued in 2007-08, 71.6 percent were for healthcare or personal services (predominately cosmetology) and just four CIP program categories accounted for nearly 85 percent of all certificates awarded by these non-degree-granting institutions.

The degree-granting (largely public) institutions are not quite so sharply focused and the top two program areas (healthcare and business) accounted for just over 52 percent of all credentials. Still, even among institutions in the degree-granting sector, there are only a few large programs and many very small programs. For example, the third highest number of certificate awards – for completion of mechanical and repair technologies programs – accounted for only 8.5 percent and the fourth highest – security and protective services – accounted for only 5.6 percent of all awards in the degree-granting sectors.

Virtually all sub-baccalaureate certificates of all lengths are awards for completion of career and technical programs rather than for academic programs. According to generally accepted taxonomy for classification of academic versus vocational (career/technical)[4], academic certificates represent less than 3 percent of all sub-baccalaureate certificates awarded by Title IV institution, degree and non-degree granting, public and private.[5]

Most important 10-Year Trends:

Over the past 10 years, there has been significant growth in certificate awards with most of that growth in awards for short-term programs certificates, which have increased about 40 percent since 1997-98. Awards for longer-term programs[6] increased much more moderately – only about 18%.

Public and private for-profit institutions have not changed their relative share of the total certificate market. The public institutions moderately increased their share of the less-than-one-year certificates and the for-profits have moderately increased their share of the one to two-year awards.

There has been a major concentration of certificate awards over the past decade. Just ten years ago in 1997-98, awards for programs of all lengths were quite widely distributed across a large number of program areas. Awards for healthcare and related programs amounted to 28.9 percent of all awards in 1997-98, and there were a significant number of awards in many other areas, including STEM fields, business-related services and consumer services. But over the past decade, certificate awards for healthcare and related services have increased to 43 percent of all awards. Demand for healthcare workers, especially nurses and other allied health care occupations has increased steadily over the past several years and virtually all healthcare licensing and certification authorities require completion of specific, institutionally-based education programs.

tions at all levels. Of those, 77% were private for profit, 15 percent were public, and 8 percent were non-profit.

[4] Levesque, Karen, Doug Lauren, Peter Teitelbaum, Martha Alt, and Sally Librera. 2000. Vocational Education in the United States: Toward the Year 2000. Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics. NCES 2000–029.

[5] According to this same taxonomy, 62 percent of associate degrees issued over the past several years are in career and technical as opposed academic fields.

[6] Here, and in many subsequent references to certificate by length, it has been convenient to consolidate awards of 1 to 2 years with the relatively small number of awards of 2 to 4 years as "longer-term" programs.

Overall certificates for STEM programs[7] have increased slightly over the past decade, from 38,141 in 1997-98 to 42,241 in 2007-08. However, as a percentage of all certificate awards, STEM awards have fallen sharply – from 8.0 percent in 1997-98 to only 5.6 percent in 2007-08. Moreover, the percentage of STEM certificates awarded for longer-term versus short-term programs has decreased from 46.3 percent to 39.1 percent. In 2007-08, there were only 16,524 STEM awards for programs of study of at least one year, about half of those at community colleges. Community colleges have more than doubled their production of STEM awards in the past ten years but mostly by increasing short-term awards.

The reasons for this decline in longer-term awards for STEM programs of study are not clear. It may be that it has been difficult for colleges to assemble in a less-than-two-year program the mix and depth of STEM skills that would find value in the labor market.

Certificate awards for programs of study in business and related fields where occupational entry is not closely regulated by professional associations have declined sharply (even in absolute terms). Awards for computer and IT programs have plateaued, perhaps along with industry demand. Awards for completion of manufacturing and related programs for manufacturing-related programs similarly have remained level over the past few years.

Another significant change over the last decade in the postsecondary landscape of certificates is the rapid demise of public, non-degree-granting institutions as significant producers of certificates. In 1996-97, these two-year and less-than-two-year institutions, most of them state or locally supported, adult-serving vocational education centers, awarded over 135,000 certificates nationally, or 23 percent of all certificates. Just eleven years later, their aggregate certificate production had dropped to about 62,769 nationally and represented only about 8.4 percent of all such awards.

This did not come from being "out-marketed" by the career colleges, the for-profit, non-degree granting sector. Indeed, the career colleges lost market share themselves over these same ten years, falling from 32 percent to 29.7 percent. The real market gainers have been the public degree-granting institutions, especially the public two-year colleges whose market share increased from just 30 percent of all certificates in 1996-97 to 41.6 percent in 2007-08.

Longer-Term Trends

It is important to recall that postsecondary certificate production was once much higher than it is now. In 1992-93, there were well over one million postsecondary, sub-baccalaureate certificates awarded, nearly 600,000 of them by non-degree-granting, private for-profit institutions and over 200,000 by non-degree granting public institutions. The Higher Education Amendments of 1992, which cracked down on unscrupulous practices by some private for-profit trade schools, led to a rapid and deep reduction in all awards of all lengths. The decline bottomed out in 1997-98 at only 550,000 total awards, with just 170,000 of those from the non-degree granting for-profits – less than 30 percent of their awards just five years earlier. Awards have increased over the past decade but the rebound has not been as sharp as the earlier decline.

The new rules governing Title IV program eligibility and tougher oversight also led to a sharp decline in enrollment and certificate production in the non-degree granting public sector – and that decline has not bottomed out. In most states, very few certificates are now awarded by non-degree granting public institutions. In fact, in 2007-08 just four states (Oklahoma, Florida, Tennessee and Ohio) accounted for 56.9 percent of all certificates issued by non-degree granting public institutions. In most states, these institutions have faded away or have been absorbed into the 2-year degree granting public institutions, the community and technical colleges.

Perhaps the most consequential long-term trend of change in certificate awards is the shift away from longer-term toward shorter-term awards. In 1987-88, short-term awards of less than one year by all Title IV eligible institutions amounted to only 43 percent of all awards. However, by 2007-08, short-term awards from all institutions accounted for 54 percent of all certificate awards.

As noted in Table A, this accelerating shift from long programs to short programs has been especially true of public two-year community colleges, where over the past 20 years short-term certificates have risen from 42 percent to 62 percent of all awards.

Some of this apparent growth in short-term awards may be due to the practice of some colleges to embed short-term awards in longer-term awards or associate degree programs, awarding certificates at certain thresholds in

[7] STEM is here defined as CIP codes 11, computer and information sciences; 14, engineering; 15 engineering technology; 26, biology and biomedical sciences; 27 mathematics and statistics; 40 physical sciences; and 41 science technology.

Table A: Shift to Short-Term Certificate Awards in Community Colleges 1987-88 to 2007-08

Year	Total	Less than 1 Year	1 to 2 Years	2 to 4 Years	Less than 1 Year as a % of Total
2007-08	312,090	192,741	112,201	7,148	61.8
1997-98	207,561	93,368	100,384	13,809	45.0
1987-88	165,402	69,516	86,483	9,403	42.0

the curriculum even though the student continues on toward completion of a longer-term program. But anecdotal information from colleges that describe this practice suggests that it accounts for only a small percentage of the increase in their short-term program awards.

Other community/technical colleges and statewide systems have increased their offerings of short-term programs as a strategy to help students achieve completion. Observing the poor rate of program completion in many degree offerings, these colleges have more formally "de-constructed" some of their longer-term programs into three or four linked short-term programs. Some colleges refer to this as "chunking" and others as building "stackable" certificates. The argument for this approach holds that students who fail to complete the longer programs should and could be awarded credentials for completion of big parts of the program. Also, long-term certificates and degree programs seem daunting to students who work and often have family responsibilities are discouraged by the time required to get to a degree on a part-time schedule. If short-term programs can be carefully tied together into a career-focused occupational pathway and if students over time can complete several of these stepping stone programs at a pace that works for them, they can gradually accumulate enough credit for a degree.

Unfortunately, there is yet no evidence that students actually are stacking short-term certificates and building them into longer-term certificates or degree. Moreover, it is not at all clear that these short-term programs, even if they are steppingstones to career qualifications, independently offer adequate labor market returns that will pay off for students.

A close examination of this shift to short-term credentials at the public two-year colleges reveals that it has been closely timed to the increased concentration of awards in health care. Specifically, community colleges have been increasing their production of certificates for short-term healthcare programs at a very rapid pace. From 1987-88 to 2007-08, awards for completion of longer-term healthcare programs more than doubled from 20,587 to 46, 981. But, over that same 20 years, awards for completion of short-term health programs increased from 12,865 to 60,543, a nearly four-fold increase. Nearly half these awards are for nursing aide or certified nursing assistant programs that by federal regulation minimally require only 75 classroom hours of instruction.

Gender

Women far outnumber men in receipt of certificates. In 2007-98 women received 61 percent of less-than-one-year certificates and 66 percent of one-to-two year-certificates. This mirrors the preponderance of women in all levels of postsecondary education below the doctorate/professional level and it reflects the relatively large number of certificate awards in healthcare and health-related occupations where women far outnumber men.

However, this gender imbalance appears only when considering all certificates from all institutional sectors. There is a huge gender difference between the two largest sectors. In 2008, of the 304,656 certificates awarded by 2,404 private, for-profit institutions (career colleges), over 72 percent went to women and only about 28 percent went to men. However, among the 1,027 public two-year degree-granting colleges (community and technical colleges), men receive almost as many certificate awards as women (47 and 53 percent respectively).

In fact, in 2008, men at these public community and technical colleges received 51 percent of all short-term certificate awards while women received 49 percent. In all fields of study except healthcare, awards to men by community colleges significantly outnumber awards to women – 61 percent to 39 percent. Still, because men receive a very small percentage of awards in healthcare programs of study and because healthcare programs have become such a large share of the total, men trail women in overall certificate awards. In the community colleges in 2008, men received only 19 percent of awards of all length in

healthcare programs and only 14 percent of the longer-term certificates in healthcare programs.

In the proprietary colleges, women even more significantly outnumber men in their share of certificates for healthcare fields of study. However, they outnumber men in their share of all awards and of all lengths awards even when healthcare is not included.

Race

Certificates are especially important credentials for Black and Hispanic students. In 2007-08, the Black and Hispanic student share of associate degrees was 23.5 percent and their share of bachelor's degrees was only 17.3 percent. However, the Black and Hispanic share of less-than-one-year certificates from all Title IV institutions was 34.9 percent and their share of longer-term certificates (one-to-two year and two-to-four year combined) was 35.6 percent.

Once again, as is the case with degrees, there has been massive gender imbalance within these certificate numbers with men receiving less than half as many awards than women. Black and Hispanic men accounted for only 12.4 percent of all less-than-one-year certificates while Black and Hispanic women received 22.5 percent. The Black and Hispanic male share of all one-to-two-year certificates was about the same –12.4 percent – while Black and Hispanic women accounted for 23.2 percent. In 2007-08, Black males accounted for only 4.8 percent of all long-term certificates awarded in the United States. But even this low level exceeds their share of associate and bachelor's degrees (3.8 and 3.1 percent, respectively).

Looking more narrowly at only public community colleges, a slightly different picture emerges, one in which Blacks and Hispanics receive a smaller share of certificate awards, albeit without quite as much gender imbalance. Here, Blacks and Hispanics accounted for only 27 percent of less than one-year certificates and 24.5 percent of long-term certificates. Within the short-term certificate category, there was scarcely any gender imbalance – Black and Hispanic men received 25,227 awards and Black and Hispanic women received 26,721 awards. In the longer-term awards, the gender imbalance returns: Black and Hispanic men received only 11,599 awards from community colleges while women received 17,752.

The big picture story that begins to emerge from these data is that public two-year institutions (community colleges) may not be providing access or helping Black and Hispanic students reach completion in the certificate programs to the extent that for-profit career colleges are graduating them. The community colleges are producing more awards overall than their competitors in the career college sector, but a significantly smaller share of those awards are going to Blacks and Hispanics than is the case with the career colleges.

Certificates by State:

There is huge variation, as demonstrated by Chart 3 (and Appendix 3), in the relative contribution of public versus private sector institutions to certificate production. As noted earlier, non-profit institutions contribute relatively few certificates, of all lengths – less than 5 percent.[8] But the private, for-profit colleges award about 42 percent of all certificates nationally and in some states they contribute a much higher percent of all certificates of all lengths. In New Jersey and Connecticut, for example, over 80 percent of all certificates are awarded by the for-profit sector while in North Carolina and Wisconsin for-profit institutions produce less than 15 percent of all certificates.

Public sector institutions in the Northeast states of Maine, Vermont, New Hampshire, Connecticut, Massachusetts, Rhode Island, New York, Pennsylvania, and New Jersey are almost totally out of the certificate marketplace. As Appendix 3 indicates, in all of those Northeast states, public sector institutions contribute less than half the national average of certificate awards. From 75 to 90 percent of certificates are awarded by for-profit sector institutions.

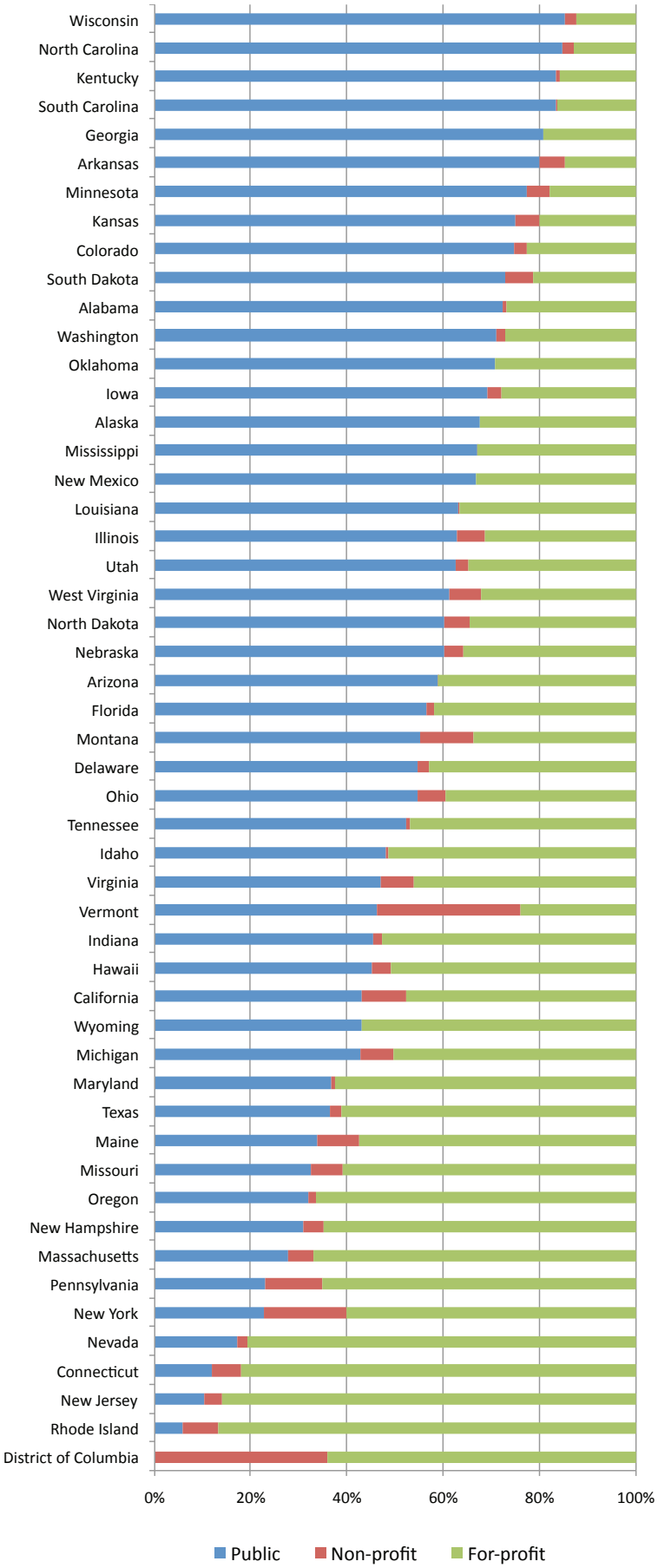
On the other side of the spectrum, in a group of states in

[8] Almost a third of the certificates awarded by non-profits have been in California but even there the non-profit sector contributes only about 10 percent of total awards.

Table B: Awards to Black and Hispanic Students by Sector, 2007-2008

Sector	Total Awards	To Blacks and Hispanics		< 1 year Awards	To Blacks and Hispanics		1 < 4 year Awards	To Blacks and Hispanics	
		#	%		#	%		#	%
Community Colleges	312,425	81,299	26.0	192,789	51,948	27.0	119,636	29,351	24.5
Career Colleges	226,731	96,881	42.7	111,720	51,976	46.5	115,011	44,905	39.0

Chart 3: Variation by state by sector of awards



the South and mid-South that includes North Carolina, South Carolina, Georgia, Kentucky, Tennessee, and Arkansas public sector institutions strongly dominate the certificate marketplace. However, suggesting this is not just a regional phenomenon, the state where the private sector takes the smallest share of total certificates is Wisconsin.

Table 4 (and Appendix 4) compares total certificate awards and the public sector share of those certificates by state on a per population basis. This table (4A) reveals that, while postsecondary institutions in every state and the District of Columbia award certificates, there is very great variation in the number of certificates produced per 10,000 of population. Kentucky leads in certificate production per population at almost twice the national average. Other major certificate producers relative to population are Arizona, Georgia, Louisiana, Florida and Kansas. States that produce very few certificates relative to their population are Vermont, Hawaii, Montana, Maine, New Hampshire, Nevada, New York, and Alabama. All of these states award well below half of the national average on a per population basis.

Table 4B also demonstrates quite clearly that those Northeast states that lag the nation in public sector certificate awards relative to awards from the private sector also lag the nation in terms of public sector awards relative to population. And, those states that lead in public sector certificate awards relative to awards from the private sector also lead in terms of public sector awards relative to their state's population.

The relatively low certificate output of public sector institutions in several states is not simply a matter of market strategy where the public sector is simply leaving certificate production to the private sector while it concentrates on associate's degrees. Careful review of the data in Tables 4A and 4B reveals that in most states where the public sector plays a relatively small role in certificate production, total certificate production is relatively low: *i.e.*, total certificates awarded are significantly lower as a percentage of state population than is true nationally.

Within a state, it might be true that for-profit institutions are mostly concentrated where there is a large population base so that public sector institutions in less populated regions might see relatively more effective demand for certificates. However, this does not

Table 4: Certificates Awarded by State, per population

Table 4A: All Certificates				Table 4B: Public-sector Certificates		
State	All Certs	Per 10,000 population		State	Public sector certs	Per 10,000 population
Hawaii	843	6.5		D. C.	0	0.0
Vermont	421	6.8		Rhode Island	164	1.6
Montana	682	7.0		New Jersey	1438	1.7
Maine	1122	8.5		Nevada	502	1.9
New Hampshire	1446	11.0		Connecticut	891	2.5
Nevada	2931	11.3		New York	5313	2.7
Alabama	5467	11.7		Maine	377	2.9
New York	23529	12.1		Hawaii	380	2.9
Mississippi	3685	12.5		Vermont	194	3.1
North Dakota	840	13.1		New Hampshire	446	3.4
Idaho	2005	13.2		Montana	376	3.9
Indiana	8573	13.4		Massachusetts	2974	4.6
West Virginia	2526	13.9		Oregon	1809	4.8
South Dakota	1139	14.2		Pennsylvania	6024	4.8
Virginia	11187	14.4		Missouri	3035	5.1
Maryland	8308	14.7		Maryland	3040	5.4
Oregon	5663	14.9		Indiana	3892	6.1
Missouri	9384	15.9		Idaho	961	6.3
Alaska	1101	16.0		Virginia	5249	6.8
New Jersey	14108	16.2		North Dakota	505	7.9
Massachusetts	10796	16.6		Mississippi	2462	8.4
Delaware	1617	18.5		Alabama	3943	8.5
South Carolina	8348	18.6		West Virginia	1545	8.5
Nebraska	3441	19.3		Texas	21083	8.7
North Carolina	18559	20.1		Michigan	8701	8.7
New Mexico	4008	20.2		Delaware	883	10.1
Michigan	20400	20.4		South Dakota	828	10.3
Pennsylvania	26321	21.1		Alaska	741	10.8
Connecticut	7570	21.6		Nebraska	2064	11.6
Iowa	6690	22.3		Tennessee	7380	11.9
D.C.	1321	22.3		**Nation Average**		**13.3**
Tennessee	14164	22.8		Ohio	15303	13.3
Texas	58007	23.8		Wyoming	713	13.4
Ohio	28033	24.4		New Mexico	2673	13.5
Nation Average		**24.7**		California	49922	13.6
Washington	16450	25.1		Iowa	4610	15.4
Utah	7139	26.1		South Carolina	6938	15.5
Minnesota	13713	26.3		Utah	4455	16.3
Rhode Island	2800	26.6		North Carolina	15699	17.0
Oklahoma	10574	29.0		Washington	11651	17.8
Arkansas	8617	30.2		Minnesota	10573	20.3
Colorado	14948	30.3		Illinois	26298	20.4
Wyoming	1662	31.2		Florida	37498	20.5
Wisconsin	17570	31.2		Oklahoma	7461	20.5
California	116302	31.6		Colorado	11150	22.6
Illinois	41890	32.5		Arkansas	6864	24.0
Kansas	9743	34.8		Louisiana	11369	25.8
Florida	66477	36.3		Kansas	7288	26.0
Louisiana	18037	40.9		Arizona	17170	26.4
Georgia	40773	42.1		Wisconsin	14959	26.6
Arizona	29275	45.0		Georgia	32890	34.0
Kentucky	19678	46.1		Kentucky	16397	38.4
Nation Totals	749883			Nation Totals	399081	

Table 5: Certificate and associate degree production	
State	**Certificates as % All Sub-Baccalaureate Awards**
Lowest certificate-to-associate production	
Hawaii	27.0%
Vermont	33.3%
North Dakota	38.0%
New York	40.7%
Mississippi	41.8%
Highest certificate-to-associate production	
Connecticut	149.7%
Arkansas	154.8%
Kentucky	193.9%
Georgia	298.0%
Louisiana	361.0%

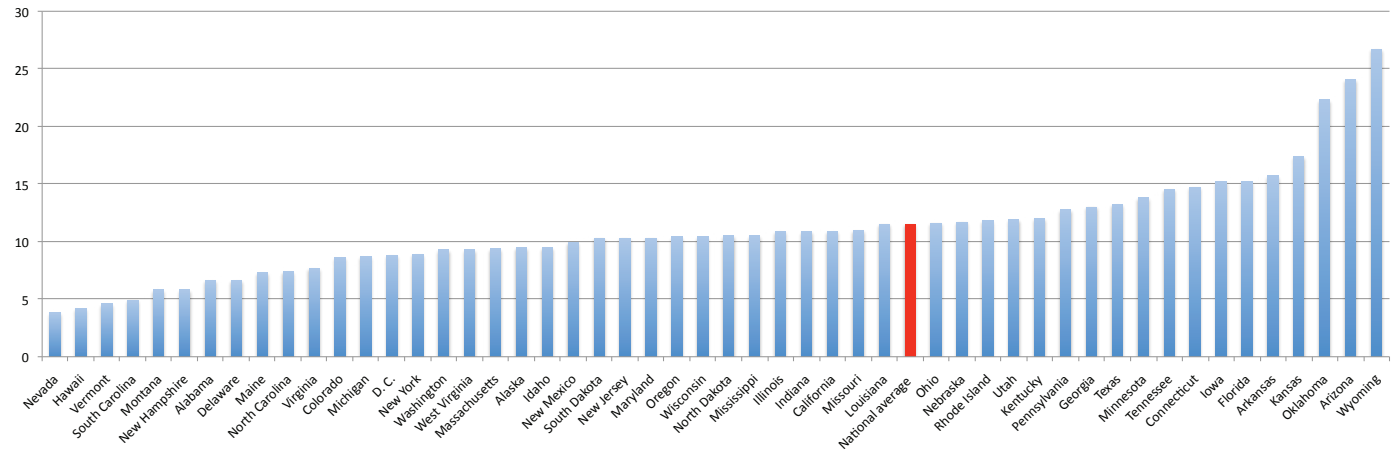
seem to be true across states. Community colleges in New York, for example, do not produce many certificates, but that is not necessarily because private sector institutions in New York have captured the market. They do not award many certificates either.

Table 5 (and Appendix 5) compares the states in terms of certificate awards as a percentage of all sub-baccalaureate completions. The disparities at the margins among the states are startling. In some states, the number of certificates awarded hugely outweighs the number of associate degrees granted – Louisiana and Georgia produce three times as many certificates as associate degrees. Kentucky produces twice as many certificates as associate degrees. At the other end of the scale, certificates are less than 40 percent of all sub-baccalaureate completions in Hawaii, Vermont, North Dakota and New York.

The number of certificates awarded on a per-population basis varies widely by state, as noted in Appendix 6. This includes the number of certificates of all lengths awarded per population (Appendix 6A) and in the number of 1 to 4 year certificates per population (Appendix 6B and chart 6). Again, it demonstrates wide variation between the states in the lengths of the certificates they produce on a per population basis. While Kentucky, Louisiana, and Illinois, for example, are among the largest producers of all certificates on a per population basis, that is clearly because they produce so many short-term certificates. They drop behind or close to the national average when looking only at the longer-term certificates. On the other hand, Arizona, Kansas, and Florida are among the leaders in certificate production per population both for those of all lengths and those of longer term.

Appendix 7 compares all the states in their production of all sub-baccalaureate awards relative to population and again reveals considerable variation, some quite puzzling. For example, as noted in Table 7, Montana, Nevada, and Idaho lag far behind the rest of the nation in the number of sub-baccalaureate awards on a per population basis, while the adjoining states of Wyoming and Utah, with very similar economic structures, are among the national leaders. In several other cases, economic structure would

Chart 6: Long-term certificate production variation, per capita



appear to have very little to do with the state's relative emphasis on certificate-level postsecondary education.

Arizona is very much a special case in these analyses. Arizona is second only to Kentucky in the production of certificates of all lengths relative to its population. However, it also produces a large number of longer, 1 to 4 year certificates, second only to Wyoming on this measure. Arizona is also a very large producer of associate degrees, awarding more degrees than certificates. As a result, Arizona is well ahead of all other states in the number of all sub-baccalaureate awards relative to the state population.

Table 7: Sub-baccalaureate Awards per 10,000 in selected states

State	Sub-Baccalaureate Awards per 10,000 Population
Montana	23.6
Nevada	24.4
Idaho	32.3
Nation	**49.8**
Utah	62.3
Wyoming	81.9
Arizona	96.3

Certificate Awards by Public Two-Year Colleges

Additional tables look more narrowly at public two-year institutions - community and technical colleges. Appendix 8 shows the contribution of each state's community college system to certificates and associate degrees. California's community colleges produce by far the largest number of certificates, followed by Georgia and Illinois. Community colleges in Texas, North Carolina, Arizona, Kentucky and Florida also produce large numbers of certificates.

Appendix 9 considers in particular the production of certificates at the public two-years of all certificates and of longer-term certificates as a percentage of all sub-baccalaureate completions at those institutions. States ranking highest on this measure include Arizona, Arkansas, Indiana, Louisiana, New Mexico and Texas. However, in the case of Indiana and Louisiana, this is less because they produce so many one to two year certificates and more because they produce so few completions of any kind. Certificate production, for programs of any length, is clearly a relatively unimportant part of the role of community and technical colleges in the Northeast states of Vermont, Rhode Island, New Hampshire, New York, Massachusetts, Connecticut, Pennsylvania and New Jersey or in a few other states such as Alaska and Nevada.[9]

Appendix 10 offers some data that helps compare and contrast state community college systems in terms of their relative emphasis on long-term certificates versus associate degrees, both on a per population basis. This data reveals that several of those states producing a large number of long-term certificates relative to their population also produce a large number of associate degrees relative to their population. Community colleges in Iowa, Minnesota, Wyoming, New Mexico, Kansas, and Washington produce well above the national average in both degrees and long-term certificates and as a result are leading producers of all sub-baccalaureate credentials. They are not making any apparent trade-offs and seem to have figured out how to incorporate a strong portfolio of long-term certificates into an aggressive push for associate degrees.

However, some community college systems – Delaware, Kentucky, Texas, Arkansas, and most notably Louisiana and Georgia– that out-produce the national average in long-term certificates lag the average in associate degrees awarded. And conversely a few state systems, like New York and New Jersey that are at or above the national average in degree production award very few certificates relative to population, and fall well back in the combined count. There are some states (including most of the states in the Northeast) where lagging production of both associate degrees and long-term certificates may suggest a lack of commitment or at least attention to sub-baccalaureate credentials at any level.

[9] In Tennessee, Florida, Oklahoma, and Ohio, there are statewide systems of public non-degree granting postsecondary vocational institutions with sharply focused certificate missions that provide relatively large numbers of certificates. This depresses the share produced by the community colleges in those states and distorts the apparent lack of public sector commitment to certificates that is otherwise suggested by these tables.

Conclusions: The wide variation among the states in certificate production, overall, by sector, and especially among community colleges in different states, presents an opportunity for careful further investigation by policy-makers and practitioners at the state level. Some of this variation may be attributed to structural differences in the economies of these states. It may be that some regional economies in the Northeast states of New York, New Jersey and Connecticut, for example, do not offer as many employment opportunities for certificate completers as might be the case in other states. But this assessment suggests that other important factors are at work. Institutional culture and state policy probably play an even more significant role than economic factors.

Below the level of the state, at the level of individual community colleges, there is even greater variation among colleges, in their relative shares of certificates to total completions, but even more strikingly in the fields of study in which the awards concentrate. Within any particular state, most community colleges report that they award the largest share of their certificates, of all lengths, for completion of healthcare programs. However, beyond that, there is virtually no pattern at all. When data about completions by program is aggregated up to a state level, there seems to be some consistency or uniformity in offerings but, when comparing individual colleges, all signs of consistency vanish.

Some colleges might report business programs as their second largest certificate program while other colleges in that state, serving apparently very similar labor markets, offer virtually no certificates in business programs but might report personal services of cosmetology and culinary as a very large program. It is not unusual for an urban college to offer as many as 50 to 75 discrete certificate programs (and report completions in any particular year in fewer than half those programs). A sampling of several colleges reveals that there is little change from one year to the next in the relative share of awards among various programs, although there can be much more variation over a longer period of say ten years.

This offers the possibility that certificate program offerings often may have less to do with labor market needs than with the interests of faculty or college leadership and the inertia of resource allocation practices.

Section II: Assessing Labor Market Returns to Certificates

National Level Assessments

Most estimates of labor market returns to schooling at any level agree that an additional year of schooling raises yearly earnings between 5 and 10 percent (Card 1999). Census data show consistently that workers with higher education levels have higher annual earnings, higher wages, more hours worked, and less unemployed than those with lower levels of education attainment. However, census data does not distinguish certificates as a specific postsecondary attainment level (instead, is reported as "some college, no degree").

Most empirical research at the national level about the affect of postsecondary education on earnings has centered on the bachelor's degree and to a lesser extent on the earnings consequence of an associate degree. Very little research has examined the labor market returns to sub-baccalaureate study and even less in regard to sub-associate credentials. Even the limited national level research that might shed light on returns to certificates offers findings that are often ambiguous and almost certainly distorted by the wide (and growing) variation in the length of programs of study that lead to the certificate.

Most national level research has relied on longitudinal surveys of education and employment carried out by the U. S. Department of Education and the Census Bureau.[10] These longitudinal surveys track sizeable cohorts of students right through any postsecondary preparation and completions and into jobs. The data from these surveys allow outcomes comparisons among these students. For example, it is feasible to contrast the annual earnings, wages, and employment intensity among those in the survey with different levels of education attainment more finely grained than Census data.

However, while those surveys incorporate several questions about study for and gaining of credentials that include certificates, they do not gather information from the individuals participating in the surveys about the *length* of the certificate programs they might have completed.

Failing to account for the wide variation in length of certificate programs limits outcomes analysis of certificate attainment as it relates to returns. The self-report of a certificate award could suggest completion of a program of study of as few as 6 to 9 semester hours or a program of up to 50 to 55 semester hours. The steady movement over the past several years in sub-baccalaureate awards from longer-term to shorter-term programs noted earlier casts further doubt on the utility of earnings assessments that group all certificates into one broad category.

Sample size is also a limitation. These longitudinal surveys of the Department of Education and the Census Bureau begin with fixed numbers of students at a particular point in time (e.g., 9th grade enrollment) and track them through college and into jobs. The number of students who are certificate recipients as their highest level of attainment is likely to be quite small and sub-dividing this group by length of certificate program (even if that were feasible) would make the results even less conclusive.

Despite these limitations, some of the research drawing from these national surveys is very useful in helping to understand and measure returns to certificates and returns to varying length of postsecondary study without regard to credential completion. For example, relying principally on NLS-72, Kane and Rouse (1995) found consistent returns to a sub-baccalaureate degree of roughly 15 to 25 percent higher than a high school diploma. They found returns to a year of sub-baccalaureate course work to be on the order of 4 to 7 percent.

Kane and Rouse also noted the possibility of a sub-baccalaureate "sheepskin effect" suggesting that completing a formal credential (an associate degree or a certificate) has a somewhat greater earnings impact than merely completing the amount of education typically associated with that credential. However, they did not find consistent evidence of significant earnings return to certificates, *per se*. Individuals who identified a postsecondary "certificate" as their highest level of attainment, without regard to length of study, were not found to report earnings significantly higher than those with only a high school degree.

Grubb (1993, 1997, and 2002) also was unable to demonstrate that certificate attainment in and of itself without regard to length of study consistently resulted in higher earnings. However, Grubb (1993) drew upon the SIPP data from the 1970s and 1980s to conclude that positive earnings generally associated with sub-baccalaureate study could be eroded by failure to earn a certificate or degree. He also concluded that job earnings could vary

[10] From the National Center for Education Statistics, *National Longitudinal Study of the High School Class of 1972* (NLS-72), *High School and Beyond (HS&B) National Education Longitudinal Study* (NLS-88), *National Postsecondary Student Aid Study* (NPSAS), *Beginning Postsecondary Students* (BPS), *National Educational Longitudinal Survey* (NELS) and, from the Census Bureau, *The Survey of Income and Program Participation*.

widely across the field of study and positive earnings were directly tied to employment in the field of study.

Grubb (1997) again drew on the SIPP data to underscore further the importance to earnings of gaining a certificate in comparison to completing one year of college without gaining a credential. He used SIPP data to investigate the economic returns to participation in short-term job training programs and found no evidence of significant returns. This led him to conclude that, overall, government-sponsored, short-term training programs do not substantially increase earnings. He did however find a high level of variability in labor market effects, depending on the characteristics of the individual, the labor market, and most especially the program of study.

In a later review of the limited research then available, Grubb (2002) was able to conclude that there were positive returns to each year of course work in either two-year or four-year colleges. He estimated that a single year of course work at either a two-year or a four-year school increases earnings by 5 to 10 percent. However, he still did not find consistent evidence of significant positive earnings returns to certificates.

Kerchoff and Bell (1998) underscored the finding of Grubb that higher levels of postsecondary attainment do not always translate into higher earnings. Their research found that community college certificates in some high-value program areas could be associated with higher earning than might result even from associate degree programs in some lower-value program areas. They concluded that earnings were quite often similar for individuals who completed vocational certificates and those who completed associate degrees in similar fields of study. Only in the field of nursing did they find a significant difference in earnings for associate completers, relative to certificate completers. However, some studies have found differing results. Sanchez, Laanan, and Wiseley (1999), for example, found significantly higher earnings for associate degree completers in California than for completers of other types of degrees.

Drawing on NLS-88, HS&B and BPS-89, Bailey, Kienzl and Marcotte (2004) concluded that simply completing a certificate without regard to length of study had no significant value for men. In fact, men completing a year of school without a gaining a certificate were found to have higher earnings than those completing a certificate but not completing at least one year of college. For women, on the other hand, the research found that those gaining a certificate even without completing a year of college earned more than those with only a high school degree. This study did find an earnings difference based on enrollment intensity and estimated that, overall, enrollment in a community college increases earnings between 5 and 8 percent for each year of enrollment, even if the student does not receive a degree.

Using data from the 2001 SIPP, Ryan (2005) reviewed monthly earnings by education attainment and field of training. She found that those with a postsecondary vocational certificate (the length of the program for which the certificate was awarded is not specified in SIPP surveys and it might well be longer than one year) reported monthly earnings on average 15 percent higher than those with only a high school diploma. She also found substantial variation in earnings depending on the field of training – some very high and some no greater than the average earnings of high school graduates with no postsecondary participation. For example, those with vocational certificates in engineering reported monthly earnings in excess of those who gained an associate degree in engineering. Those who received a certificate in business on the other hand reported earnings at about the same level as those with high school degrees only (and well below those with an associate degree in a business-related field).

Ryan's review of SIPP data also found that Blacks and Hispanics with vocational certificates had average earnings below Whites with vocational certificates. However, within cohorts of both Blacks and Hispanics, the premium associated with a postsecondary vocational certificate over high school attainment still was much higher than for the cohort of Whites (27 percent and 22 percent for Blacks and Hispanics, respectively, versus 14 percent for Whites).[11]

Ryan's analysis of the 2001 SIPP data also found that individuals who completed a postsecondary vocational certificate on average started their program of study 3.5 years after completing their high school education, slightly longer than those who began their successful associate degree program (3.3 years) and considerably longer than those who began their successful bachelor's program (0.9 years). On average it took them 2.6 years to complete their program.

[11] A brief review of data from the 2004 SIPP panel on the Bureau of Census web pages reveals that this premium for vocational certificates over high school attainment only has increased for all races but especially for Blacks.

Marcotte (2009) drew on the 2000 follow-up to NLS to investigate the effects of enrolling in community college on students' subsequent earnings. He found consistent evidence of earnings benefits to community college enrollment even without a credential and found that both earnings and wages rise with credits completed. This research also found a strong earnings effect of a certificate for women, estimating that the earnings effect of a certificate for women even exceeds the return to an associate degree for men. This might be attributed to women more commonly enrolling in programs providing access to occupations where postsecondary credentials are particularly important, *i.e.*, nursing and health-related positions.

Osterman's (2005) synthesis of research on labor market returns to sub-baccalaureate credentials concluded that, controlling for test scores, family background, and a range of demographic characteristics, one year's worth of postsecondary study returns about a six percent annual income gain. He underscored, however, that a strikingly low fraction of students who enter community colleges ever accumulate a year's worth year of credits. His analysis of research by others concluded that those students who entered community colleges but did not receive a degree, attained on average only .16 of an FTE year.

Adding it up – national level assessments:

This review of national research about earnings effect of postsecondary, sub-baccalaureate certificate attainment offers limited, but nonetheless important conclusions. The big limitation is that the primary data sources have not permitted a careful distinction among levels of certificates and lengths of the programs of study they represent. That, plus the fact that the databases used for all these analyses rely on self-reporting, makes it very difficult to draw firm conclusions about the earnings return to certificates, *per se*.

Still, there seems to be clear agreement across all these studies that one year of study after high school results in earnings above of the level of those with no postsecondary participation and in some fields of study one year can produce striking results, even without a credential. However, according to almost all of these studies, short-term programs with postsecondary participation of less than one year have very little return. This suggests that long-term certificates for programs of one year or more have good economic returns while certificates for shorter-term programs of study do not.

State Level Assessments of Labor Market Returns to Certificates

Most states do not routinely analyze labor market returns to postsecondary credentials awarded by institutions in their state, or, if they do, they often do not make the data available publicly. Most four-year colleges and universities with labor market research capacity have generally not seen themselves as producing graduates for local or even regional labor markets and are not much interested in determining how much their graduates earn. Two-year colleges that are more focused on regional labor markets and may be more interested in earnings of their graduates generally have lacked robust research capacity. Until fairly recently, many state community college system-level administrators have not collected and aggregated data about student outcomes. That has changed rapidly over the past several years as more states have developed more sophisticated student record systems. But even some states that have good student record systems do not routinely compare student records to unemployment insurance wage records maintained by the state's department of labor.

Fortunately, some states do and there have emerged a number of research studies that yield solid findings about earnings returns to sub-baccalaureate study. This section profiles some of those studies and highlights findings about labor market return to certificates with special attention to those that yield information about the value of programs by length and by field of study.

California: California was an early pioneer among states in using Unemployment Insurance records to track the post-college employment rates and earnings of community college students. Research in the 1990s (Friedlander, 1996) of a large sample of 173,523 students from 18 California community colleges who either completed a degree or certificate or stopped attending (in 1991 or 1992) found that the wages of those students who received either a degree or a certificate from an occupational program were significantly higher than those who left their program without completing a degree or certificate and even higher than those who completed a "non-occupational" program and did not continue on to a four-year college. (Presumably those would have been only associate degree programs since California did not award certificates for non-occupational programs.) Friedlander found that students with a degree or certificate experienced a 47 percent wage gain between their last year of college and their third year after college.

Subsequent research in California (Sanchez and Laanan,

1997) employed similar methodology to examine UI wage records of all the students (700, 564) enrolled in 1992-93 in all 106 of the California community colleges, comparing completers with leavers and comparing median annual earnings in the last year in college, the first year out of college, and the third year out of college, by attainment level. It found small gains at all levels for those students of all ages who left without gaining a certificate but significantly larger gains both for those completing certificate and for those completing a degree. Over all, those with degrees made more money but those with certificates increased their wages just as much as degree holders in those three years after completing their programs. Younger completers gained more than older completers, and women gained more than men.

This early work in California did not formally compare short-term versus long-term certificates. However, the majority of certificate programs in those years were long term. In 1992-93 over 56 percent of the about 18,000 certificates awarded by public two-year institutions in California were for completion of programs of at least one year. (In 2007-08, only about 32 percent of about 48,000 certificates from the California public two-years were for completion of a program of at least one year.)

Moreover, this research was able to assess gains relative to credit accumulation, a proxy for length of study. According to the Sanchez and Laanan study, students who completed fewer than 24 units (semester hours) showed positive earnings gains, but those gains were "not substantial." From the first year out of school to the third year out, students who completed at least 24 units but did not receive a certificate or associate degree experienced a 27 percent increase in wages while those who completed that many units and received a credential experienced a 33 percent increase. Interestingly, students who completed an associate degree experienced slightly lower wage gains (of 25 percent) from the first to third year out of college, but on average made more money their first year out than did the certificate completers.

Florida: Among the most comprehensive state level assessment of earning returns (using UI wage records) to sub-baccalaureate education is Jacobsen's (2008) research drawing on student records and wage data from Florida to help identify educational pathways to high-paying careers. Florida has for several years maintained an integrated secondary-postsecondary database with detailed records on the high school grades and course-taking history of hundreds of thousands of students, and this database is able to track those students through postsecondary education and into the workforce.

Florida career centers and community colleges are relatively larger producers of certificates, somewhat skewed toward the shorter term. In 2007-08, the 20 public community colleges and 38 non-degree-granting, postsecondary career centers produced 16,852 certificates of less than one year and 12,324 longer-term certificates. The certificates are awarded for completion of programs of study from just a few months (or perhaps two or three courses over one semester) to two years. Jacobson's analysis did not distinguish certificate programs by length of study. It is difficult to determine with any precision the average length of postsecondary study for certificate awards in Florida but, given the mix of programs and program length, it seems safe to conclude the average length of study was less than one year – probably between 20 and 25 semester hours.

For his research, Jacobson selected those students who entered the 9th grade in Florida in 1996, which, after some exclusions, resulted in a beginning cohort of about 144,000 students. The research followed a sub-cohort (about 34 percent) of those students who reached the 12th grade, then entered a Florida postsecondary institution within 2 years of their high school graduation, and then left college by 2005. This allowed at least three years to follow the earnings of those students.

This research revealed that those students who gained a certificate from a Florida career center or a community college and did not enroll in the semesters subsequent to their completion had median earnings 27 percent greater than those students who left college without any credential. Jacobson discovered that the median earnings for those who gained certificates were greater than for students who received an AA degree and did not enroll in a four-year college to begin to leverage their AA into higher attainment. This suggests that students who gained a non-vocational "pre-baccalaureate" associate's degree and do not go on to gain a bachelor's degree fail to achieve the earnings gains of their peers who completed an occupationally-focused sub-associate program.

Jacobson's analysis concluded that certificate students have greater earnings primarily because they are more likely to concentrate their study in higher return fields than are AA students. He found that 78 percent of certificate students concentrate in healthcare, professional, and vocational technical fields while only 32 percent of AA students concentrate in these areas. Jacobson found that concentrat-

ing in health-related fields increases earnings by over 40 percent relative to those concentrating in humanities and concentration in professional/technical fields raise earning 20 percent above those who concentrate in humanities.

Jacobson also found that students who gained certificates did not have above average high school performance or preparation, did not attend high schools with higher than average graduation rates, and were more likely to be in disadvantaged groups. This led Jacobson to conclude that getting a career-oriented certificate is an important pathway to higher earnings open to "lower performing high school students." He found this particularly significant because strong positive earnings effects of AA, BA, and graduate degrees were largely confined to high performing high school students. Their postsecondary success represented simply a continuation of their earlier trajectory, while for the certificate completers who did not do so well in high school, it represents something quite different.

Kentucky: Community colleges in Kentucky are major producers of certificates. In 2007-08, certificates of all lengths represented 71.5 percent of all sub-baccalaureate credentials produced by the community college system. However a very high percentage of these awards (86.2 percent) are for programs of study of less than one year. Only Connecticut and Alaska skew more toward the short-term certificates and neither are significant producers overall.

In Kentucky, the short-term awards are termed "certificates" while the longer-term awards are called "diplomas." Data is collected and can be analyzed separately for both categories. According to earlier estimates (Bloomquist 2007), the average number of credits earned by someone who gains a certificate in Kentucky is 25 semester credits (although some are over 30 credit hours and would be reported to IPEDS as one-to-two-year certificates) while the average for someone who gains a diploma is 57 semester credits. These estimates include credit accumulated that might not count towards the specific requirements of the program (e.g., remedial courses or additional elective courses or courses that may be pre-requisites to program courses for some students).

Jepsen, Troske and Coomes (2009) examined labor market returns to certificates and diplomas and degrees, drawing on a large administrative data set for all community and technical college students in Kentucky. The research focused on two cohorts of students who started in Kentucky Community and Technical College System in 2002-03 and 2003-04.[12] The data set permitted analysis controlling for pre-college earnings and for differences among students in educational goals and first-term enrollment intensity. The research was able to draw upon quarterly earnings data of the state unemployment insurance program. The research further was able to control for intensity of enrollment, student intent, and for age and race. Basically, it measured the economic results of those who completed their program of study compared to those who did not. Earnings were calculated as average quarterly earnings through the third quarter of 2008, beginning for each student in the first quarter after completion of a credential or the first quarter in which a non-completer left college without returning in the study period.

This research found, focusing directly on the sub-associate level, significant and consistent earnings returns to diplomas and less significant but still consistent returns to certificates for all those who gained those credentials as opposed to those who did not receive those awards. In fact, overall returns to diplomas were found to be nearly the same as returns to associate's degrees – for women nearly 40 percent and for men around 20 percent. Men who completed their certificate programs (that's the shorter-term program in Kentucky) earned about 10 percent more than those who did not complete, but the earnings advantage for women who completed certificate programs was only about 3 percent over non-completers.

Translating these returns into dollar amounts (2008 dollars) suggests that the annual earnings return to diplomas in the KCTCS was about $8,000 per year for women and $7,000 per year for men. Annual dollar returns to certificates were estimated at $650 for women and $800 for men. Looking only at students who did not gain awards, this research also was able to estimate positive returns to one year of "full-time" coursework at around 10 percent or $3,450 annually.

Field of study was found to be a very important determinant of the earnings advantage to completion of award. Associate's degree completers in health programs had a very large positive return relative to non-completers – 75 percent for women and 57.8 percent for men. Health diploma completers also saw very strong returns – 50.8 percent for women and 22.9 percent for men. (LPN preparation is a diploma program, not a certificate program in

[12] In those years the certificate portfolio of most community and technical colleges in Kentucky was less skewed toward short-term awards than it has become since.

Kentucky.) Vocational diplomas had large positive effect of 22.9 percent for men and 21.4 percent for women. Diplomas in service occupations were not associated with significantly higher earnings for completers relative to non-completers.

At the certificate level, men had healthy positive earnings effects from certificates in vocational programs (12.4 percent) but not in health or services. Women had modest positive outcomes from health and service programs and neither had significant positive outcomes from completion of certificate-level programs in business.

This research was also able to draw important conclusions about the impact of community college awards on the probability on employment. It estimated that associate's degrees are associated with a 10.8 to 12.5 percent increase in employment for men and a 16.7 to 18.2 percent increase for women but diplomas had an even more positive effect – 13.7 to 15.4 for men and 16.6 to 20.1 for women. Certificates were found to contribute positively to the probability of employment – 3.9 to 5.2 percent for men and 5.9 to 7.2 for women – but not at all to the same degree as diplomas and associate degrees.

Washington: In 2005, the Washington State Board students Community and Technical Colleges tracked employment outcomes for 35,000 adults who entered community/technical colleges in Washington in 1996-97 and 1997-98. The study cohort included first-time college students who were age 25 and older with a high school diploma or less. It also included 18-24 year olds who lacked a high school diploma or GED and enrolled for the first time in the two years. It followed the attainment and earnings of those students for five years after the year of their initial enrollment. Six years after enrollment, one year of college plus a technical credential produced an earnings increase of:

- $8,500 per year for ABE students who lacked a high school diploma;
- $7,000 per year for ESL students who lacked a high school diploma;
- $2,700 per year for GED-holders; and
- $1,700 per year for high school graduates.

The research found that late starters – age 25 plus students – who completed at least one year's worth of college (in Washington 45 quarter credit hours) in a credentialed program of study earned over $4,000 more annually than those who either did not complete the same amount of credits or failed to gain a credential.

This research did not specifically address earnings outcomes for students who completed a certificate of less than one year, but it did examine outcomes for several hundred students who were referred to community/technical colleges by TANF, WIA, or other agencies for short-term "retraining." Of 557 such students in the cohort under study who completed a prescribed program of study (not necessarily the same as a "short-term certificate" but perhaps quite similar), 463, or 83 percent, earned less than one year's worth of college credits over the five-year study period. Specifically, these students completed their prescribed program but did not achieve 45 quarter credit hours (one year's worth of credit hours). According to the research study, these students earned substantially less than did students who completed at least one year of college and earned a credential. That earnings differential averaged about 20 percent for those who started with a high school degree or GED and a whopping 50 percent for those who had not completed high school as they started their program.

Illinois: In 2007, the Center for Governmental Studies of Northern Illinois University completed a report on the Economic Impact of Illinois Community Colleges under agreement with the Illinois Community College Board. That report summarized an analysis matching U.I. earnings data with students who enrolled in and then graduated from or left (for two successive semesters) Illinois community colleges over a ten-year period from 1995 to 2005.

In 1996, 32,786 students completed programs at Illinois community colleges. Almost two-thirds of those gained associate's degrees –AASs, AAs and ASs. About 3,600 students gained occupationally oriented certificates for programs of one year or more and about 5,200 students gained certificates for completing short-term programs of less than one year.

Regrettably, the Illinois study does not explicitly examine earnings by credential level. Rather, most of the findings are presented simply for community college "completers." On the other hand, it does examine pre-college and post-college earnings and considers returns to various programs of study and credit accumulation (but not length). The average gains from pre-enrollment to post-enrollment in 2005 for all completers and all credentials was $6,628 with the highest gains for students completing programs in protective services, construction, health and related sciences, and engineering technology.

Oklahoma: The Oklahoma Department of Career and Technical Education manages a statewide system of 29 Technology Centers with over 50 campuses that offer a wide range of education and training services for individuals and for businesses. The Centers serve both high school students and adults with full-time programs that lead to credentials with labor market value. On the adult side of their operations, the Center offers certificate programs but not degrees and in 2009 there were 11,567 adults enrolled in full-time technical/occupational programs. In 2008, IPEDS data indicate that the Technology Centers awarded 7,099 certificates to adults, 84 percent of them for programs of at least one year.

A research report in 2006 attempted to estimate the lifetime income gains and impact on the Oklahoma economy of those who completed their full-time programs in 2001-02 – 6,923 adult completers with an average age of 29.9 years. The challenge facing this study was that student records and the earnings data that would permit the most rigorous form of analysis for programs completers were not available. The Oklahoma Department of Career and Technical Education did not then maintain detailed demographic and academic profiles of the students and the Oklahoma Employment Security Commission was not able to provide pre-training work and wage history, nor could it provide post-training occupation and hours worked.

This study did not attempt to compare the gains of certificate completers with leavers and it did not use Oklahoma-specific wage data. Rather, the researchers simply used applied national estimates derived from the Census ACS survey for 2000-02 to calculate likely returns to Oklahoma program completers. Census survey data on wages for those with vocational certificates were "adjusted' with Oklahoma-specific employer reported wage data. Basically, the pre-training hourly wage for the adult certificate completers was assumed to be $11.31 and the post-training wage estimate was set at $12.46 for the first year out of school. The rate was then scaled using Oklahoma-specific data to estimate hourly wage rates by program and district.

Using this methodology, the Oklahoma researchers concluded that certificate completer gained very significant returns to their earning. The lifetime income gains estimate for the average adult certificate completer was calculated to be $324,309. That represents all fields of study since the methodology used in this Oklahoma study does not permit comparison of completers by program area or individual field of study.

Wisconsin: The Wisconsin Technical College System is a relatively high producer of associate's degrees and long-term certificates (called "technical diplomas" in Wisconsin), but they also produce a large number, relative to their population, of short-term credentials, called "certificates" in Wisconsin.

The 16 colleges in the Wisconsin system annually survey their graduates six months after they complete their Technical College program. The 2009 survey contacted 23,659 graduates and received usable survey responses from 71 percent. Salary estimates were calculated from the 73 percent of those respondents who report being employed full-time in occupations related to their training (86 percent of the 2009 respondents reported that they were employed). The 6-month out report makes no attempt to compare the wages or incomes of graduates to non-completers or to others who are working in the occupations without a postsecondary credential. However, it does enable comparisons within and among program areas or broad occupational clusters among various levels of completers.

Overall, the 6-month out report indicates that graduates reported salary levels that reflect higher salaries for higher attainment. Median salaries for associate's degree completers were reported at $36,000; 2-year technical diplomas recipients reported $29,898; 1-year technical diplomas reported $28,078; and short-term technical diplomas reported median salaries of $24,958.

Those overall median salaries, however, masked important variations among occupations and fields of study. In many programs categories, such as industrial and technical programs, completers of short-term programs reported earnings higher than those who completed longer-term certificates or even associate's degrees. This is almost certainly because many who pursued a short-term certificate in these fields already had considerable experience and wage history in the field they pursue while fewer certificate and associate's degree candidates come to the program with as much background and salary experience. Because the methodology does not permit a comparison of earnings pre-program with earnings post-program, it is not particularly helpful in understanding the actual earnings value added by a one-year certificate from the technical colleges relative to a short-term credential.

In health care, few experienced health care technicians or professionals are likely to pursue a short-term certificate. Completers of short-term health care certificates reported

median wages of only $23,364 while associate degree completers in health fields overall report median earnings of $44,925. But even here, attainment levels do not always predict earnings. Median earnings for some categories of one-year certificate completers in health care were higher than for some categories of associate degree completers.

The Wisconsin Technical College System office also examines wages five years out through the same survey methodology. In 2007, it generated a list of 2001-02 graduates as recorded in that year's six-month follow-up study for each college. The colleges then surveyed these graduates a total of 17,833 statewide; 7,316 responded, a 41 percent response rate. Again, however, the study methodology does not permit conclusions about the value-added by one particular length of credential relative to another.

Iowa: Researchers in Iowa (Laanan, Starobin, Compton, and Fridel, 2009) matched data of the Iowa Workforce Development UI wage records with student records (including data from the National Student Clearinghouse) to measure the earnings of students who were enrolled in Iowa community colleges in 2001-02 and did not transfer or reenroll in the following year. The study analyzed the earnings of these students one year and three years after enrollment. It identified as a "completer" those students who received a degree, certificate, diploma, or other credential during the 12 months from July 1, 2001 to June 30, 2002 and then were not enrolled anywhere in the subsequent year. It identified "leavers" as those who did not receive a credential and then were not enrolled anywhere in the subsequent year.

In the Iowa community college system, a "diploma" generally requires completion of a program of study of at least 30 semester hours and frequently requires as many as 45 semester hours. Most diplomas have some general education course requirements. A "certificate" typically is awarded for completion of a program of study of less than 30 semester hours and usually does not include general education requirements. Iowa's community colleges produce about twice as many long-term certificates (diplomas) as short-term certificates. Iowa's community colleges are a very high producers of both long-term certificates and associate's degrees on a per population basis.

The most important findings from this Iowa research that are relevant to this certificate study include the following: overall, the completers, regardless of the level of the program, have substantially higher annual earnings than the leavers – 14 percent more one year after completion and 17 percent more three years out. However, those who gain only a certificate had the smallest increment of advantage over the non-completers.

Overall, returns to AAS degree completers were significantly higher than returns to diplomas. However, among completers only, those who gained a diploma had the greatest increase in median annual earning from the first year after program completion to the third year after program completion. One year after completion, the average AAS completer had a 33 percent wage advantage over the average diploma completer and a 42 percent earnings advantage over a certificate completer. However, three years after completion the AAS wage advantage relative to diploma completer had narrowed to 23 percent while the AAS wage advantage relative to certificate completer had shot up to 55 percent.

This AAS to diploma wage advantage three years out was much higher among women than among men. However, three years after completion, women who earned only a certificate had experienced very little wage gains.

Overall, students who leave community colleges in Iowa with a diploma do not make a lot more money than leavers one year after completing their program – only about 2 percent. But after just three years, their median annual earnings were 11 percent higher than those who left without a credential.

Adding it up – state level assessments:

Findings from the state level assessments of earnings returns to certificates as summarized above are quite consistent. Certificate attainment overall has positive earnings results. In some fields of study, median earnings of certificate completers approximate or even surpass median earnings for associate degree completers (especially those in "pre-baccalaureate" non-occupational fields who do not leverage their associate's degree into a bachelor's degree).

Even more importantly, much of the state level research was able to distinguish between short-term and long-term certificates and results show quite convincingly that long-term certificates have significantly more labor market value and earnings return than short-term certificates. Individuals who complete long-term programs of study make significantly more money that those who enroll in these programs but do not complete them. Individuals who complete short-term programs of study do not make significantly more money that those who enroll in these programs but do not complete them. That is generally true across all fields of study.

However, field of study is a very important determinant of earnings outcomes and, in some fields, those who complete long-term programs make as much money as the average of those who complete associate degree programs. That is because certificate completers are more likely to earn awards in fields with relatively high labor market returns and take jobs where they can realize that return than are those who gain associate degrees and do not go on to higher attainment. That is probably because that latter group contains a large percentage of associate's degree completers whose field of study was non-vocational.

The research suggests that returns to short-term programs are not nearly so substantial. Field of study is important for short-term certificates but because earnings outcomes are not strongly positive, the relative returns by field are not nearly so consequential as at the long-term certificate level.

The research also suggests that helping students from low-income families find their way into longer-term certificates programs with high earnings is very important. In this regard, of particular significance is Jacobsen's finding from his research in Florida that certificates represent a pathway to consequential attainment for low-income students who did not do well in high school.

The more substantial labor market payoff to longer-term certificates relative to short-term ones is to some extent further validation of the hypothesis that more college leads to higher earnings, almost always. But, because credit accumulation plus a long-term certificate leads to higher earnings than either credit accumulation or a short-term certificate alone, more is clearly at work here.

Informal interviews and discussions with community college workforce development officials suggest that certificate programs of at least 30 semester hours pay off because the program length allows greater technical and academic rigor and a wider and deeper range of occupationally relevant skill development than is possible in short-term programs. These longer-term programs typically include significantly more math and language skill development, often embedded in an applications framework (and sometimes therefore not apparent as general education courses), than is feasible in most short-term programs. Longer-term programs offer a framework for the development of workplace knowledge and behaviors (so-called *social skills*) that are important to employers.

Short-term program tend to be sharply focused on a narrower range of vocational skills and competencies. Time and pedagogy do not easily permit the development of applied math, reading and writing skills. Limited instructional time does not facilitate engagement with other students, faculty, and staff that can shape workplace behaviors. Many of the short-term programs were designed not to establish foundational skills in an occupation or to build a platform for long-term occupational mobility. Rather, their purpose more often is to update skills or to introduce newer technologies and business practices to workers who already have an established foundation and experience in their occupation.

Section III: Major Findings and Recommendations

1. Sub-baccalaureate certificates for programs of one year or more offer under-appreciated and still under-developed potential to contribute to national, state, and regional targets for education attainment and skill development.

Long-term certificates, those awarded for a program of study of at least 30 semester hours, 45 quarter hours, or 900 clock hours, certainly should "count" toward national and state attainment goals. Postsecondary institutions, especially community colleges, should be encouraged to increase dramatically their enrollments and completions in these certificate programs. Certificates for completion of programs of study of at least one year are well rewarded by the labor market and in some fields they lead to earnings similar to those with associate degrees. They are accessible to young people building a new career, to working adults whose skills are not adequate to advance into family supporting jobs, and to unemployed and dislocated adults looking for a new start.

Expanding these certificate programs with strong labor market returns can be an especially significant strategy for promoting access and success for non-traditional students who have been underrepresented among successful completers of associate and bachelor's degree programs. This would include those with family and work responsibilities and those facing hard financial pressures or disadvantaged by other socioeconomic factors. It can also be a good pathway to high wage jobs for those who may not have had strong preparation or high achievement at the secondary level.

Not nearly enough long-term certificates are now being awarded. In 2008, Title-IV approved postsecondary institutions in the 50 states and the District of Columbia awarded 1,564,265 bachelors' degrees and 768,477 associate's degrees while awarding only 347,616 long-term certificates. This "inverted pyramid" of postsecondary credentials is strikingly inconsistent with an emerging economy where significantly more jobs will require some college but not necessarily a bachelor's or an associate's degree, and where, as President Obama suggested last year, all new entrants to the workforce will need at least a year of postsecondary education.

There can be no uncertainty about labor market demand for new job entrants with the levels of skill and attainment typically represented by successful longer-term certificate completers. The Georgetown University Center on Education and the Workforce estimates that burgeoning demand for workers with high levels of education and training will create especially large opening for new workers at the certificate level, pulling more high school graduates and pushing more working adults with only a high school degree into postsecondary vocational training programs.

2. The federal government and the states should set aggressive goals for long-term certificate production.

Certificate awards for completion of programs of at least one year can make a very significant contribution to national and state attainment goals. As of 2010, only about two-thirds of high school graduates continue on to postsecondary education within a year after finishing high school. Educationally robust and occupationally relevant certificate programs have good potential to attract large numbers of that one-third who are not enrolling in college. These certificate programs also can be very attractive to the millions of adult workers who left high school many years ago and did not think that they needed further postsecondary education. With elevated status as part of national and state attainment goals and because good certificate programs can attract both new high school graduates and adult workers, there is more room for growth at this level of postsecondary attainment than seems likely at the associate's and bachelor's degree levels.

An ambitious national goal would be to double the number of long-term certificates produced within the next five years and then double that number again in the next five years. That would represent an increase from just short of 350,000 in 2008 to roughly 750,000 by 2015, and to 1,500,000 by 2020 – a pace of increase that might seem impractical when confronted with the current trajectory of change that has seen a small increase of only 18 percent over the last ten years. However, this ambitious goal seems much more achievable when viewed from the demand side and when considering that some states already are producing two or three times the national average.

On a per population basis, Arizona produces over four times as many long-term certificates as the national average. Moreover, Arizona's postsecondary institutions have

managed to do that while producing well above average numbers of associate's degrees on a per population basis. From just ten years from 1987-88 to 1997-98, Arizona increased its production of long-term certificates by 222 percent and then in the next ten years from 1997-98 to 2007-08, the state increased long-term certificates by yet another 243 percent. Community college programs in Arizona accounted for most of this rapid growth. (The presence of the University of Phoenix does not account for Arizona's lead in long-term certificates, as they produce just 10 percent of the long-term certificates in Arizona.)

Iowa's community colleges produce over two and one-half times the national average of long-term certificates on a per population basis. Like Arizona, Iowa managed to increase its production rapidly to that level over a relatively short time while maintaining the second highest level (next to Wyoming) of associate's degrees per population of any state.

3. States and the federal government should assure that their funding formulas and policy incentives support robust certificate programs of one year or more and discourage shorter-term programs that do not have a significant labor market payoff.

In general, the gradual shift at the state level toward more outcomes-based funding should begin to advantage certificate programs to the extent that they are more likely than associate's degree program to achieve positive outcomes, *i.e.*, higher rates of completion. However, it will be important for state policies and funding arrangements to rein in the rapid growth of short-term certificate programs that might appear to some as a quicker path toward higher graduation rates. In fact, it seems appropriate for state community college systems to consider the feasibility of beefing up some short-term programs to build one-year programs that might offer a stronger platform for occupational growth and labor market mobility.

State financial aid programs should be carefully reviewed to assure that they offer full eligibility for qualifying long-term certificate programs that have solid labor market returns. States should consider how their financial aid programs provide incentives for students to pursue long-term versus short-term programs.

The Department of Education should consider the feasibility of tightening some Title IV program eligibility rules to slow the rush toward short-term degrees, especially among community colleges. One possibility would be to increase the program length threshold that triggers to need for colleges to assure that the programs are meeting completion and placement rates of at least 70 percent. Right now, only programs of 300 to 600 clock hours or eight to sixteen semester hours are held to this standard. That upper threshold could be raised to 900 clock hours and include all semester hour based programs that are designed for a student attending full-time to complete in less than one academic year.

The admonition here to beware short-term certificate programs comes with some important qualifications and should be carefully considered. Short-term training programs, rewarded and validated by a certificate, at spaced intervals over an occupational pathway, can certainly serve the very useful purpose of maintaining and updating skills to permit long-term occupation growth and mobility. Obviously, forcing a student into a 30-semester hour credit program when completion of just a few three or four-credit hour courses would have the same result does that student no favor. But it is hard to ignore the labor market data that reveals little economic pay-off to short-term programs.

A reasonable interpretation of that data is that short-term certificate programs do not offer a sufficient foundation for occupational entry and growth, certainly in comparison to longer-term programs. They may adequately update the technical/occupational skills of an adult worker already well launched into a career but they appear not to constitute appropriate preparation for young adults or dislocated workers seeking a new occupation with a family-supporting career trajectory. This suggests that state policies and college practices should "aim" young people and career builders toward longer-term certificate programs while continuing to make short-term programs highly accessible to adults who are well into a career pathway and who look to the community college for periodic skill-building that will maintain their career trajectory.

4. State and federal policy-makers and college practitioners should insist on rigorous data analysis, and promote labor-market alignment and consistent program offerings.

Many individual colleges do not have the research capacity to conduct regular analysis of labor market returns to their certificate programs (or to their occupationally focused associate degree programs). Further, program co-

hort sizes for individual colleges may not be large enough to offer reliable information about individual program outcomes. However, state community college and higher education oversight agencies have the capacity carry out this analysis on a regular basis. They should and the results should be widely available to students, administrative staff, and faculty. Most states now have reasonably good student information systems and methodology to match student records with wage records from UI data sets is widely available.

As described in Section II above, there are enough reliable studies of earnings returns to certificates from several data sources to offer comfort at a high level of generality that long-term certificates overall have solid labor market returns. However, this review of these studies also reveals that returns vary significantly among different fields of study. Moreover, different regional labor markets will reward these various fields of study differently. If students are to be even minimally advised about what earnings they might expect from different programs levels (short-term certificates, longer-term certificates, and degrees) and from different fields of study, they will need up-to-date, dependable information. They ought not to have to rely on data about median earnings in the occupation that ignores educational preparation. They should know what to expect from different pathways to different credentials.

Some states now carry out regular surveys of program completers to gather information about their earnings. That is better than doing nothing but this self-reporting methodology can be unreliable and in any case offers quite limited results.

Ideally, state oversight agencies would conduct annual or biennial surveys of earnings returns to all certificate programs (and of course to all occupational associate degree programs as well). These surveys usually could draw representative statewide samples by major program of completers and non-completers, examining the earnings of that cohort at varying intervals after program completion. Administrative records from the state UI database generally can be matched to student identifiers. Some of the studies cited in this research demonstrate how this kind of analysis can be used to compare wage outcomes of completers versus non-completers, by program field and length of study, gender, race, age, family incomes, employment history, family and dependent status, and other socioeconomic characteristics. More states have developed or are developing integrated secondary-postsecondary student record systems that soon will offer the foundation for deep longitudinal analysis of the sort that has been carried out (and reviewed here) in Florida.

In those states that have seen the fastest expansion of short-term certificate programs versus longer-term programs this kind of labor market analysis will be very important. In fact the most important first question can be answered without reliance on UI data: Is there any solid evidence that students who gain short-term "career pathway" certificates subsequently actually are stringing multiple certificates together, building toward a longer-term certificate or associate degree? If not, it will be important in justifying the continuation of these programs to validate the labor market returns.

Certificate programs are too important to national and state attainment goals, to employers, and to students seeking a strong foundation for a career launch to be left to only loose external oversight. A college and a state college system that is serious about realizing optimal performance and strong labor market returns from certificate-oriented programs will re-think its portfolio of certificate programs and how they might better align with degree programs. In addition, it will be important to increase employer involvement and external oversight through more specialized and more proactive accreditation.

At the national level, aggregated data about certificate programs reveals that 80 percent of all longer-term awards from all institutions are concentrated in just four broad program fields – healthcare, business, mechanical/repair technologies and personal services (mostly cosmetology). All other awards are widely scattered among 35 fields of study and no other single field accounts for more than 4 percent of all awards. At the state level there is less consistency. While every state reports that its largest concentration of awards is in healthcare, some states report high numbers of awards in fields that are low nationally, and others report low numbers of awards in fields that are high nationally.

At the institutional level there is even less consistency. This would be expected from private career colleges that tend to specialize in just a few areas or even in just one program. However, this lack of consistency in program offerings is also very pronounced among community colleges within a particular state. Most produce a lot of health care awards but some report none at all. Some colleges in a particular state might concentrate certificate programs heavily on business-related fields and even very sharply on particular programs such as accounting certificates while a peer college in what would seem to be a very

similar labor market might have no business offerings at all, choosing to concentrate in, for example, manufacturing or automotive repair, even if it does not have an unusually high percentage of local employment in these occupations.

Another layer of complexity derives from the differences in completion requirements for programs of the same name and apparently similar outcome objectives from one college to another in the same state or even in the same metropolitan region. A casual sampling from several community colleges in several states in such popular certificate program fields as medical assisting, accounting, and construction technology reveals that completion requirements (total semester hours) can vary from one college to the next by 30 to even 50 percent. Even in highly popular LPN programs subject to the same state licensing requirement, there are large differences in prerequisites and total credit requirements.

In all of these certificate programs, colleges might have very different requirements for placement testing such that a given score on a particular test at one college might place a student directly in programs courses while at another (even neighboring) college, that same score on the same test would place student into remedial courses that might require two semesters to complete.

Further complicating certificate analysis is the fact that some colleges include general education course requirements within some of their certificate programs of study while other colleges do not. Even within a state, it is sometimes the case that a certificate program with the same name might include, for one college, two or three general education courses while other colleges in that same state would not include any requirements, even for a certificate that has the same name. Sometimes within a single college, some professional/technical programs of study leading to a certificate might require general education courses while others would not. In many colleges, the essential difference between a short-term certificate and a long-term certificate in the same technical field is simply the inclusion in the longer program of some general education courses that bring the total number of credit hours into the one-to-two-year category.

It is sometimes the case that a certificate program with the same name might include, for one college, two or three general education courses while other colleges in that same state would not include any general education requirements in that certificate pathway.

It is possible that some of these differences result from very careful planning with local employers that have specific and differing expectations about competencies. But it seems unlikely that would explain much of these inconsistencies. Some states and some colleges have very strong employer involvement practices and mechanisms, but limited evidence and informal interviews suggest that most of the variation in program offerings and program requirements from college to college results from the differing expectations of faculty and staff, not employers. That is not all bad in that occupational faculty often have strong backgrounds in the programs they teach, but it can lead to unnecessarily confusing variations in program requirements that poorly serve students and employers.

Variation in program offerings and their content are common and are commonly accepted in postsecondary education, including at the baccalaureate level. Students frequently shop among colleges to select the one that offers the mix of programs and approach to those programs that is of greatest interest to them. But few students attending community college have the luxury to shop among different institutions. Major differences in program offerings and content in community college certificate programs create big barriers to careful outcomes assessment, discourage comparative analysis that can ratchet up performance, and confuse both students and prospective employers.

State policy-makers should work with colleges to develop more consistent certificate programs that encourage variations across colleges only as might be reasonably responsive to employers in the region. Regular surveys of the regional labor market and earnings analyses as recommended above would be helpful to validate program selection and composition. Consistency in program offerings and in requirements for access and completion would permit greater focus on program quality and rigor. It would allow colleges to compare outcomes as "apples and apples" so that different outcomes can be tracked back to the quality of instruction, advising, assessment, or delivery methods.

Specifically, it seems feasible for state level administrators to develop a template or model portfolio of certificate programs and promote the adoption/adaptation of that portfolio across all the colleges in the state. Regional variation should be encouraged but only to the degree justified by carefully documented distinctions in regional labor demand in the occupations in question. General education requirements should be consistent for similar programs from college to college and they should be carefully spelled

out. Wherever possible, the skills and competencies expected from these general education requirements should be embedded in the technical curricula.

More consistent terminology would help. As noted elsewhere, there are many different kinds of education and training programs with widely varying breadth and depth that are subsumed under the label of certificate. Some states and colleges have tried to distinguish longer-term from shorter term by referring to the former as "technical certificates" or "diplomas" and to the latter as "career certificates." These terms do not seem to be spreading into wider use. Perhaps a federal effort to promote coherency and common terminology through the IPEDS reporting system would be appropriate. It could have the added benefit of elevating the status of longer-term programs consistent with the goal of attracting more students to certificate programs.

Whenever feasible, long-term certificate programs should be tied to and even nested within occupational associate degrees. That does not always make sense as in some occupations there might not be entry opportunity below the associate's level and in some occupations there may not be wage or career advantage to degrees above the long-term certificate level. But between these two cases lies great opportunity to strengthen career pathways for students by offering them linkages that will really pay off. Linking LPN preparation to RN programs is an obvious case in point, and there are similar opportunities in other allied health fields and in most other occupations in business, construction, information/computer technology, mechanical and repair technology, and STEM fields.

This approach to articulation does not necessarily mean that every course in the certificate program "count" toward the associate degree, but certainly most should. Nor does it necessarily mean that every certificate must represent at least one half of the requirements for an associate degree in that field, but again it usually should. Careful articulation or near articulation of certificates and degrees will contribute significantly to increased attainment. It can create a labor-market-valued steppingstone to the associate degree while making the one-year program itself more attractive to larger numbers of students.

Another strategy that might advance the consistency, rigor, and market responsiveness of certificate programs would be to seek more aggressive and proactive approaches to accreditation. Programs that culminate in a licensing examination, as is typical for health professions, often require specific accreditation by specialized national accrediting organizations. But most community colleges rely on their regional "institutional" accreditation for most other programs and often do not seek accreditation from specialized national accrediting bodies except when licensing authorities require it. Generally, regional accreditation does not provide aggressive "content-specific" oversight of occupational programs. They typically do not hold programs accountable to specific completion and placement requirements.

Gaining and maintaining multiple program accreditations from specialized national accreditors can be a time and resource-consuming process for community colleges with a large number of certificate programs. That is one of the reasons why colleges prefer to rely on their more general (and, from an occupational education standpoint, more relaxed) regional accreditation. An alternative might be to seek a second level of institutional accreditation from an organization like the Council on Occupational Education. COE was founded in 1971 as a regional accrediting agency of the Southern Association of Colleges and Schools, but later established itself as a national institutional accrediting agency, sharply focused on secondary and postsecondary vocational and technical education. COE holds its colleges accountable for content-specific performance, and it requires regular accountability for completions and placements. In dual accreditation with the traditional regional higher education accreditors, COE can offer an effective compromise for many community colleges looking for external validation but concerned about serving multiple, specialized accrediting agencies.

5. Federal and state policy-makers should work with college-level practitioners to increase certificate completion rates by encouraging "built-for-completion" programs structures.

As noted above, those state labor market studies that compared the earnings of those who started and completed certificate programs with those who started but did not complete them found that non-completers had negligible earnings returns to the credits they may have accumulated. Most research has found that it takes a year of coursework to gain meaningful returns and, even then, earnings lag for those who walk away with no credential. This disputes the oft-repeated argument that many students fail to complete occupational programs because they can get a good job just by taking some courses and acquiring some particular skills.

Research here suggests that there often may be a higher rate of completion in long-term certificate programs than in most associate degree programs. Institutions (public as well as private) that focus exclusively on certificate programs report "150% of time" graduation rates of two or three times the levels of those colleges that offer associate degrees and certificates[13]. These better outcomes may be attributable to program structures in these certificate-only colleges that tend to work more effectively for those with time and economic pressures; to greater immediacy and transparency of labor market payoff; and to different approaches to remediation.

Most students seeking certificates are in degree-granting community colleges. It will not be feasible to reach even modest certificate attainment goals unless a much higher percentage of community college students who pursue these credentials complete them.

Low completion rates at community colleges reflect adherence to a traditional academic structure that is not suited to the real needs of the increasingly non-traditional students they serve. Students seeking a long-term certificate generally must complete 10-15 separate courses, each typically counting for three credit hours. Courses usually meet for 60-90 minutes twice a week for 16 weeks over the semester. Many courses have prerequisites so taking the right courses in the proper sequence is critical (and some courses are not offered every semester). At least 50-60 percent of newly enrolled students are required take remediation courses over one, two, or even three semesters to build their basic skills, primarily math, before they can enroll in the program level math and English courses that represent a gateway into their field of study. Asking a student to piece together a coherent academic pathway to a credential from this structure seldom works for non-traditional community college students who are often not well-prepared, typically face severe and immediate financial pressures, frequently have family responsibilities, and do not have supports or academic advisors to help guide them through the multiple choices required by conventionally complex academic systems.

Most community college students respond to these scheduling challenges by slowing way down – attending only part-time, trying to squeeze in one or at most two courses each semester, and occasionally stopping out for a full semester. At many community colleges, the average time to complete a one-year certificate is three years and at some it is longer. At this pace, life's complications too frequently intervene and most students drop out.

New, built-for-completion models are emerging where block scheduling, cohort enrollment, integral programs, and embedded remediation help students accelerate through rigorous programs. Clear and consistent information about schedule, costs, duration, success rates, and job outcomes enables students to assess costs and benefits, see the reasons for intensity and persistence, organize their life to support it, and make the sacrifices necessary to achieve their program goals. This enables students to speed up rather than slow down. Students are asked to commit to an intensive program of full-time instruction. But they can consolidate classroom time into a fixed period each day and see a clear and predictable timetable that allows students to meet family responsibilities and even to work part-time. Time-challenged students frequently are willing to accept intensity in order to get predictability.

Private career colleges have long relied on these program structures for certificate programs and have had considerable success in graduating a high percentage of their students. Some community colleges are testing these new approaches for both degree and certificate programs. Some have been using some of these strategies in their occupational programs for several years (especially for short-term programs where course-by-course approaches have very little appeal to students) and have reported higher completion rates because of them. Wider use of these approaches will be essential if community colleges are to significantly increase their certificate awards for long-term programs.

[13] These higher completion rates in certificate-only public institutions relative to community colleges in the same states can be documented in Ohio, Florida, Tennessee, and Oklahoma, all of which have statewide systems of non-degree-granting institutions.

Getting Serious About Certificates: Promoting Greater Consistency and Quality in Certificate Programs

This study has concluded that certificate awards for completion of programs of study of at least one year have significant and consistent labor market value and should count toward national and state postsecondary attainment goals. They are particularly accessible to young high school graduates and working adults who may not now be attracted to more traditional degree programs. As the federal government and the states start treating these certificate programs more seriously as integral components of their postsecondary strategy, it will be feasible to contemplate very significant increases in the number of awards, making a strong contribution to attainment goals.

However, this assessment has also found that certificate programs are under-appreciated and under-developed in many states leading to inconsistencies among and even within states in program definitions and content. While some program variation is appropriate to reflect differences in local labor market demand, some of the variation is also attributable simply to the idiosyncrasies of faculty interest and staff direction from college to college and reflects a lack of state and national oversight by standard-setting and accrediting organizations, including national private sector employer groups. It also reflects a shortage of information among colleges about career pathways in occupations where job entry at the mid-level and advancement to family-supporting jobs does not require a degree.

Treating long-term certificates as a national measure of postsecondary attainment requires greater attention to the portability of such credentials among regions and across the country. Lack of consistency in program definitions and content inevitably will raise questions about the quality of the programs and will limit the national portability of certificates. This in turn could dampen enthusiasm for upgrading the legitimacy of the awards and for increasing production. State leadership can support this, but it seems important to provide a national framework for promoting greater consistency and quality assurance in certificate level programs.

This suggests the need for more inquiry at the state and college level to gather better information about program definitions and program content for major certificate programs and the occupational pathways for which they are to provide a foundation. Federal authorities from the Department of Education and the Department of Labor might provide some leadership here. It will also be important to secure the close involvement of national employer groups.

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Appendix 1: Summary of Sub-Baccalaureate Certificates Awarded All Title IV Institutions, By Length, By Sector 2007-08

	Less Than One Year		One to Two Years		Two to Four Years		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Public								
Public Four-Year Degree-Granting	15,742	3.9	7,131	2.3	1,349	4.3	24,222	3.2
Public Two-Year Degree Granting	192,741	47.9	112,201	35.5	7,148	22.8	312,090	41.6
Public Non-Degree Granting	27,982	7	32,526	10.3	2,261	7.2	62,769	8.4
Total Public	236,465	58.8	151,858	48	10,758	34.3	399,081	53.2
Non Profit								
Non-Profit Four-Year Degree Granting	9,522	2.4	5,364	1.7	1,270	4.1	16,156	2.2
Non-Profit Two-Year Degree Granting	2,382	0.6	1,849	0.6	215	0.7	4,446	0.6
Non-Profit Non-Degree Granting	4,970	1.2	4,754	1.5	3,758	12	13,482	1.8
Total Non Profit	16,874	4.2	11,967	3.8	5,243	16.7	34,084	4.5
Private for Profit								
Private for Profit Four-Year Degree Granting	7,260	1.8	8,458	2.7	186	0.6	15,904	2.1
Private for Profit Two-Year Degree Granting	32,982	8.2	42,886	13.6	2,029	6.5	77,897	10.4
Private for Profit Non-Degree Granting	108,686	27	101,109	32	13,122	41.9	222,917	29.7
Total Private for Profit	148,928	37	152,453	48.2	15,337	48.9	316,718	42.2
Grand Total	402,267	100	316,278	100	31,338	100	749,883	100

Appendix 2: Summary of Sub-Baccalaureate Certificates Awarded All Title IV Institutions, By Length, By Program Category 2007-08

CIP Program Category	< 1 Year		1 < 2 Years		2 < 4 Years		Total	
	Number	%	Number	%	Number	%	Number	%
Degree Granting (mostly public institutions)								
Healthcare & Related	96,669	37.1	86,665	47	5,200	42.6	185,534	41.2
Business & Related	33,831	13	14,649	8.2	496	4.1	48,976	10.9
Mechanical/Repair Tech	17,776	6.8	18,489	10.4	2,089	17.1	38,354	8.5
Security & Protective	20,163	7.7	5,097	2.9	94	0.8	25,354	5.6
Transport & Materials Moving	17,394	6.7	841	0.5	42	0.3	18,277	4.1
Construction	9,425	3.6	7,097	4	921	7.6	17,443	3.9
Personal Services (mostly cosmetology, some culinary)	7,216	2.8	9,660	5.4	327	2.7	17,203	3.8
Engineering Technology	9,150	3.5	6,052	3.4	380	3.1	15,582	3.5
All Other 43 CIP Categories	49,005	18.8	29,339	16.5	2,648	21.7	80,992	18
Total Degree Granting	260,629	100	177,889	100	12,197	100	450,715	100
Non-Degree Granting (mostly private for-profit institutions)								
Healthcare & Related	77,739	54.9	53,440	38.6	5,724	29.9	136,903	45.8
Personal Services (mostly cosmetology, some culinary)	23,530	16.6	47,387	34.2	6,154	32.2	77,071	25.8
Mechanical/Repair Tech	4,461	3.1	18,113	13.1	5,008	26.2	27,582	9.2
Business & Related	6,275	4.4	3,603	2.6	134	0.7	10,012	3.3
All Other 46 CIP Categories	27,633	19.5	15,846	11.5	2,121	11.1	45,600	15.1
Total Non-Degree Granting	141,638	100	138,389	100	19,141	100	299,168	100
Total All Certificates	402,267		316,278		31,338		749,883	100

Appendix 3: All Certificate Awards by State By Sector and Public as a Percentage of the Total 2007-08

State	All Certificates	Public Sector	Non-Profit Sector	For-Profit Sector	Public as % of All
District of Columbia	1321	0	472	849	0.0%
Rhode Island	2800	164	201	2435	5.9%
New Jersey	14108	1438	514	12156	10.2%
Connecticut	7570	891	469	6210	11.8%
Nevada	2931	502	59	2370	17.1%
New York	23529	5313	4056	14160	22.6%
Pennsylvania	26321	6024	3137	17160	22.9%
Massachusetts	10796	2974	575	7247	27.5%
New Hampshire	1446	446	59	941	30.8%
Oregon	5663	1809	85	3769	31.9%
Missouri	9384	3035	626	5723	32.3%
Maine	1122	377	100	645	33.6%
Texas	58007	21083	1315	35609	36.3%
Maryland	8308	3040	60	5208	36.6%
Michigan	20400	8701	1404	10295	42.7%
Wyoming	1662	713	0	949	42.9%
California	116302	49922	10563	55817	42.9%
Hawaii	843	380	33	430	45.1%
Indiana	8573	3892	157	4524	45.4%
Vermont	421	194	125	102	46.1%
Virginia	11187	5249	768	5170	46.9%
Idaho	2005	961	12	1032	47.9%
Tennessee	14164	7380	119	6665	52.1%
National Average					53.2%
Ohio	28033	15303	1602	11128	54.6%
Delaware	1617	883	35	699	54.6%
Montana	682	376	74	232	55.1%
Florida	66477	37498	965	28014	56.4%
Arizona	29275	17170	2	12103	58.7%
Nebraska	3441	2064	140	1237	60.0%
North Dakota	840	505	44	291	60.1%
West Virginia	2526	1545	163	818	61.2%
Utah	7139	4455	184	2500	62.4%
Illinois	41890	26298	2339	13253	62.8%
Louisiana	18037	11369	52	6616	63.0%
New Mexico	4008	2673	0	1335	66.7%
Mississippi	3685	2462	2	1221	66.8%
Alaska	1101	741	0	360	67.3%
Iowa	6690	4610	190	1890	68.9%
Oklahoma	10574	7461	0	3113	70.6%
Washington	16450	11651	284	4515	70.8%
Alabama	5467	3943	43	1481	72.1%
South Dakota	1139	828	67	244	72.7%
Colorado	14948	11150	385	3413	74.6%
Kansas	9743	7288	483	1972	74.8%
Minnesota	13713	10573	656	2484	77.1%
Arkansas	8617	6864	461	1292	79.7%
Georgia	40773	32890	0	7883	80.7%
South Carolina	8348	6938	27	1383	83.1%
Kentucky	19678	16397	116	3165	83.3%
North Carolina	18559	15699	440	2420	84.6%
Wisconsin	17570	14959	421	2190	85.1%
National Totals	749883	399081	34084	316718	

Appendix 4: All Certificates and Public Sector Certificates By State per 10,000 Population, Ranked, 2007-08

Table 4A: All Certificates				Table 4B: Public-sector Certificates		
State	All Certs	Per 10,000 population		State	Public-sector certs	Per 10,000 population
Hawaii	843	6.5		D. C.	0	0.0
Vermont	421	6.8		Rhode Island	164	1.6
Montana	682	7.0		New Jersey	1438	1.7
Maine	1122	8.5		Nevada	502	1.9
New Hampshire	1446	11.0		Connecticut	891	2.5
Nevada	2931	11.3		New York	5313	2.7
Alabama	5467	11.7		Maine	377	2.9
New York	23529	12.1		Hawaii	380	2.9
Mississippi	3685	12.5		Vermont	194	3.1
North Dakota	840	13.1		New Hampshire	446	3.4
Idaho	2005	13.2		Montana	376	3.9
Indiana	8573	13.4		Massachusetts	2974	4.6
West Virginia	2526	13.9		Oregon	1809	4.8
South Dakota	1139	14.2		Pennsylvania	6024	4.8
Virginia	11187	14.4		Missouri	3035	5.1
Maryland	8308	14.7		Maryland	3040	5.4
Oregon	5663	14.9		Indiana	3892	6.1
Missouri	9384	15.9		Idaho	961	6.3
Alaska	1101	16.0		Virginia	5249	6.8
New Jersey	14108	16.2		North Dakota	505	7.9
Massachusetts	10796	16.6		Mississippi	2462	8.4
Delaware	1617	18.5		Alabama	3943	8.5
South Carolina	8348	18.6		West Virginia	1545	8.5
Nebraska	3441	19.3		Texas	21083	8.7
North Carolina	18559	20.1		Michigan	8701	8.7
New Mexico	4008	20.2		Delaware	883	10.1
Michigan	20400	20.4		South Dakota	828	10.3
Pennsylvania	26321	21.1		Alaska	741	10.8
Connecticut	7570	21.6		Nebraska	2064	11.6
Iowa	6690	22.3		Tennessee	7380	11.9
D.C.	1321	22.3		Nation Average		13.3
Tennessee	14164	22.8		Ohio	15303	13.3
Texas	58007	23.8		Wyoming	713	13.4
Ohio	28033	24.4		New Mexico	2673	13.5
Nation Average		24.7		California	49922	13.6
Washington	16450	25.1		Iowa	4610	15.4
Utah	7139	26.1		South Carolina	6938	15.5
Minnesota	13713	26.3		Utah	4455	16.3
Rhode Island	2800	26.6		North Carolina	15699	17.0
Oklahoma	10574	29.0		Washington	11651	17.8
Arkansas	8617	30.2		Minnesota	10573	20.3
Colorado	14948	30.3		Illinois	26298	20.4
Wyoming	1662	31.2		Florida	37498	20.5
Wisconsin	17570	31.2		Oklahoma	7461	20.5
California	116302	31.6		Colorado	11150	22.6
Illinois	41890	32.5		Arkansas	6864	24.0
Kansas	9743	34.8		Louisiana	11369	25.8
Florida	66477	36.3		Kansas	7288	26.0
Louisiana	18037	40.9		Arizona	17170	26.4
Georgia	40773	42.1		Wisconsin	14959	26.6
Arizona	29275	45.0		Georgia	32890	34.0
Kentucky	19678	46.1		Kentucky	16397	38.4
Nation Totals	749883			Nation Totals	399081	

Appendix 5: Certificate Awards by State as a Percentage of All Sub-Baccalaureate Completions, 2007-08

State	All Certificates	All Associate Degrees	All Sub-baccalaureate Degrees	Certs as a % of All Sub-bac. Awards
Hawaii	843	3,128	3,971	27.0%
Vermont	421	1,264	1,685	33.3%
North Dakota	840	2,211	3,051	38.0%
New York	23,529	57,807	81,336	40.7%
Mississippi	3,685	8,822	12,507	41.8%
Maine	1,122	2,679	3,801	41.9%
Montana	682	1,601	2,283	42.6%
New Hampshire	1,446	3,179	4,625	45.5%
Iowa	6,690	13,537	20,227	49.4%
South Dakota	1,139	2,045	3,184	55.7%
Indiana	8,573	14,598	23,171	58.7%
Alabama	5,467	9,171	14,638	59.6%
Wyoming	1,662	2,703	4,365	61.5%
Virginia	11,187	17,675	28,862	63.3%
Missouri	9,384	14,445	23,829	65.0%
West Virginia	2,526	3,844	6,370	65.7%
Idaho	2,005	2,924	4,929	68.6%
Oregon	5,663	8,023	13,686	70.6%
Nebraska	3,441	4,836	8,277	71.2%
Utah	7,139	9,904	17,043	72.1%
Maryland	8,308	10,964	19,272	75.8%
Rhode Island	2,800	3,692	6,492	75.8%
Michigan	20,400	26,443	46,843	77.1%
Washington	16,450	21,194	37,644	77.6%
New Mexico	4,008	5,053	9,061	79.3%
Minnesota	13,713	16,592	30,305	82.6%
New Jersey	14,108	16,904	31,012	83.5%
Nevada	2,931	3,415	6,346	85.8%
Arizona	29,275	33,325	62,600	87.8%
North Carolina	18,559	19,622	38,181	94.6%
Massachusetts	10,796	10,926	21,722	98.8%
Pennsylvania	26,321	26,575	52,896	99.0%
Nation	749,883	750,164	1,500,047	100.0%
Florida	66,477	65,948	132,425	100.8%
Ohio	28,033	26,830	54,863	104.5%
South Carolina	8,348	7,943	16,291	105.1%
Alaska	1,101	1,031	2,132	106.8%
Delaware	1,617	1,475	3,092	109.6%
Oklahoma	10,574	9,457	20,031	111.8%
Kansas	9,743	8,175	17,918	119.2%
California	116,302	97,010	213,312	119.9%
Illinois	41,890	34,013	75,903	123.2%
Dist. of Columbia	1,321	1,047	2,368	126.2%
Texas	58,007	45,867	103,874	126.5%
Colorado	14,948	11,219	26,167	133.2%
Tennessee	14,164	9,712	23,876	145.8%
Wisconsin	17,570	11,884	29,454	147.8%
Connecticut	7,570	5,056	12,626	149.7%
Arkansas	8,617	5,567	14,184	154.8%
Kentucky	19,678	10,148	29,826	193.9%
Georgia	40,773	13,684	54,457	298.0%
Louisiana	18,037	4,997	23,034	361.0%

Appendix 6: Certificate Awards by State Per 10,000 Population, 2007-08

Table 6A				Table 6B		
State	**All Certificates**	**All Certificates per 10,000 Population**		**State**	**Certificates of 1 to 4 Years**	**1 to 4 Year Certificates per 10,000 Population**
Hawaii	843	6.5		Nevada	992	3.8
Vermont	421	6.8		Hawaii	547	4.2
Montana	682	7		Vermont	286	4.6
Maine	1122	8.5		South Carolina	2212	4.9
New Hampshire	1446	11		Montana	557	5.8
Nevada	2931	11.3		New Hampshire	768	5.8
Alabama	5467	11.7		Alabama	3085	6.6
New York	23529	12.1		Delaware	579	6.6
Mississippi	3685	12.5		Maine	961	7.3
North Dakota	840	13.1		North Carolina	6789	7.4
Idaho	2005	13.2		Virginia	5969	7.7
Indiana	8573	13.4		Colorado	4226	8.6
West Virginia	2526	13.9		Michigan	8670	8.7
South Dakota	1139	14.2		D. C.	522	8.8
Virginia	11187	14.4		New York	17347	8.9
Maryland	8308	14.7		Washington	6079	9.3
Oregon	5663	14.9		West Virginia	1695	9.3
Missouri	9384	15.9		Massachusetts	6139	9.4
Alaska	1101	16		Alaska	651	9.5
New Jersey	14108	16.2		Idaho	1448	9.5
Massachusetts	10796	16.6		New Mexico	1972	9.9
Delaware	1617	18.5		South Dakota	827	10.3
South Carolina	8348	18.6		New Jersey	8970	10.3
Nebraska	3441	19.3		Maryland	5826	10.3
North Carolina	18559	20.1		Oregon	3952	10.4
New Mexico	4008	20.2		Wisconsin	5875	10.4
Michigan	20400	20.4		North Dakota	673	10.5
Pennsylvania	26321	21.1		Mississippi	3086	10.5
Connecticut	7570	21.6		Illinois	14069	10.9
Iowa	6690	22.3		Indiana	6959	10.9
D. C.	1321	22.3		California	40189	10.9
Tennessee	14164	22.8		Missouri	6517	11
Texas	58007	23.8		Louisiana	5072	11.5
Ohio	28033	24.4		Nation	347616	11.5
Nation	749883	24.9		Ohio	13358	11.6
Washington	16450	25.1		Nebraska	2079	11.7
Utah	7139	26.1		Rhode Island	1244	11.8
Minnesota	13713	26.3		Utah	3266	11.9
Rhode Island	2800	26.6		Kentucky	5126	12
Oklahoma	10574	29		Pennsylvania	15978	12.8
Arkansas	8617	30.2		Georgia	12582	13
Colorado	14948	30.3		Texas	32120	13.2
Wyoming	1662	31.2		Minnesota	7216	13.8
Wisconsin	17570	31.2		Tennessee	8992	14.5
California	116302	31.6		Connecticut	5130	14.7
Illinois	41890	32.5		Iowa	4564	15.2
Kansas	9743	34.8		Florida	27881	15.2
Florida	66477	36.3		Arkansas	4484	15.7
Louisiana	18037	40.9		Kansas	4869	17.4
Georgia	40773	42.1		Oklahoma	8115	22.3
Arizona	29275	45		Arizona	15679	24.1
Kentucky	19678	46.1		Wyoming	1424	26.7

Appendix 7: All Sub-Baccalaureate Awards by State, Per 10,000 Population, 2007-08

State	All Sub-Baccalaureate Awards	All Sub-Baccalaureate Awards per 10,000 Population
Montana	2,283	23.6
Nevada	6,346	24.4
Vermont	1,685	27.1
Maine	3,801	28.9
Hawaii	3,971	30.8
Alaska	2,132	31.1
Alabama	14,638	31.4
Idaho	4,929	32.3
Massachusetts	21,722	33.4
Maryland	19,272	34.2
West Virginia	6,370	35.1
New Hampshire	4,625	35.1
Delaware	3,092	35.4
New Jersey	31,012	35.7
Connecticut	12,626	36.1
Oregon	13,686	36.1
Indiana	23,171	36.3
South Carolina	16,291	36.4
Virginia	28,862	37.1
Tennessee	23,876	38.4
South Dakota	3,184	39.6
D. C.	2,368	40
Missouri	23,829	40.3
North Carolina	38,181	41.4
New York	81,336	41.7
Pennsylvania	52,896	42.5
Mississippi	12,507	42.6
Texas	103,874	42.7
New Mexico	9,061	45.7
Nebraska	8,277	46.4
Michigan	46,843	46.8
North Dakota	3,051	47.6
Ohio	54,863	47.8
Arkansas	14,184	49.7
Nation	1,500,047	49.8
Louisiana	23,034	52.2
Wisconsin	29,454	52.3
Colorado	26,167	53
Oklahoma	20,031	55
Georgia	54,457	56.2
Washington	37,644	57.5
California	213,312	58
Minnesota	30,305	58.1
Illinois	75,903	58.8
Rhode Island	6,492	61.8
Utah	17,043	62.3
Kansas	17,918	63.9
Iowa	20,227	67.4
Kentucky	29,826	69.9
Florida	132,425	72.3
Wyoming	4,365	81.9
Arizona	62,600	96.3

Appendix 8: Associate's Degrees and Certificates Awarded by Public Two-Year Institutions, 2007-08

State	Associate's degrees	all certificates	all sub-baccalaureate completions	Less than 1 Year Certificates	More Than 1 Year Certificates
Alabama	7,679	3,833	11,512	2,036	1,797
Alaska	24	47	71	44	3
Arizona	12,400	16,332	28,732	7,068	9,264
Arkansas	4,116	5,718	9,834	2,972	2,746
California	81,743	41,483	123,226	27,835	13,648
Colorado	5,798	6,653	12,451	5,028	1,625
Connecticut	3,917	891	4,808	879	12
Delaware	1,126	883	2,009	508	375
District of Columbia	0	0	0	0	0
Florida	30,319	12,155	42,474	9,560	2,595
Georgia	7,945	32,342	40,287	23,348	8,994
Hawaii	2,055	240	2,295	0	240
Idaho	1,135	447	1,582	189	258
Illinois	25,119	26,029	51,148	20,587	5,442
Indiana	5,377	2,561	7,938	349	2,212
Iowa	10,262	4,524	14,786	1,511	3,013
Kansas	7,099	6,056	13,155	4,092	1,964
Kentucky	6,483	16,297	22,780	14,051	2,246
Louisiana	2,838	9,544	12,382	7,004	2,540
Maine	1,550	365	1,915	5	360
Maryland	10,255	2,421	12,676	14	2,407
Massachusetts	8,643	2,581	11,224	1,750	831
Michigan	20,360	7,852	28,212	3,472	4,380
Minnesota	12,443	10,379	22,822	5,044	5,335
Mississippi	8,340	2,417	10,757	156	2,261
Missouri	8,770	1,937	10,707	526	1,411
Montana	1,070	220	1,290	9	211
Nebraska	4,032	2,064	6,096	1,095	969
Nevada	460	241	701	0	241
New Hampshire	1,466	442	1,908	366	76
New Jersey	15,207	718	15,925	133	585
New Mexico	4,494	2,585	7,079	866	1,719
New York	33,049	1,889	34,938	0	1,889
North Carolina	17,651	15,589	33,240	10,967	4,622
North Dakota	1,019	318	1,337	90	228
Ohio	15,189	7,590	22,779	4,875	2,715
Oklahoma	6,734	514	7,248	191	323
Oregon	6,795	1,807	8,602	396	1,411
Pennsylvania	12,189	2,546	14,735	1,105	1,441
Rhode Island	1,223	161	1,384	48	113
South Carolina	6,968	6,916	13,884	5,356	1,560
South Dakota	1,069	738	1,807	208	530
Tennessee	6,741	1,509	8,250	1,033	476
Texas	38,497	19,917	58,414	6,760	13,157
Utah	3,852	3,183	7,035	2,183	1,000
Vermont	453	40	493	0	40
Virginia	12,274	4,886	17,160	3,314	1,572
Washington	17,278	9,982	27,260	6,621	3,361
West Virginia	2,065	685	2,750	223	462
Wisconsin	9,288	12,891	22,179	8,678	4,213
Wyoming	2,147	672	2,819	196	476
Nation	507,006	312,090	819,096	192,741	119,349

Appendix 9: Public Two-Year Degree-Granting Institutions Certificates as a Percentage of all Sub-Baccalaureate Completions, 2007-08

State	All Certificates as a % of all Sub-Baccalaureate Completions		State	1 Year and More Certs as a % of All Sub-Baccalaureate Completions
New Jersey	4.5%		Connecticut	0.2%
New York	5.4%		New Jersey	3.7%
Oklahoma	7.1%		New Hampshire	4.0%
Vermont	8.1%		Alaska	4.2%
Hawaii	10.5%		Oklahoma	4.5%
Rhode Island	11.6%		New York	5.4%
Montana	17.1%		Tennessee	5.8%
Pennsylvania	17.3%		Florida	6.1%
Missouri	18.1%		Massachusetts	7.4%
Tennessee	18.3%		Vermont	8.1%
Connecticut	18.5%		Rhode Island	8.2%
Maine	19.1%		Virginia	9.2%
Maryland	19.1%		Pennsylvania	9.8%
Oregon	21.0%		Kentucky	9.9%
Mississippi	22.5%		Hawaii	10.5%
Massachusetts	23.0%		Illinois	10.6%
New Hampshire	23.2%		California	11.1%
North Dakota	23.8%		South Carolina	11.2%
Wyoming	23.8%		Ohio	11.9%
West Virginia	24.9%		Washington	12.3%
Michigan	27.8%		Colorado	13.1%
Idaho	28.3%		Missouri	13.2%
Virginia	28.5%		North Carolina	13.9%
Florida	28.6%		Utah	14.2%
Iowa	30.6%		Nation	14.6%
Indiana	32.3%		Kansas	14.9%
Alabama	33.3%		Michigan	15.5%
Ohio	33.3%		Alabama	15.6%
California	33.7%		Nebraska	15.9%
Nebraska	33.9%		Idaho	16.3%
Texas	34.1%		Montana	16.4%
Nevada	34.4%		Oregon	16.4%
New Mexico	36.5%		West Virginia	16.8%
Washington	36.6%		Wyoming	16.9%
Nation	38.1%		North Dakota	17.1%
South Dakota	40.8%		Delaware	18.7%
Delaware	44.0%		Maine	18.8%
Utah	45.2%		Maryland	19.0%
Minnesota	45.5%		Wisconsin	19.0%
Kansas	46.0%		Iowa	20.4%
North Carolina	46.9%		Louisiana	20.5%
South Carolina	49.8%		Mississippi	21.0%
Illinois	50.9%		Georgia	22.3%
Colorado	53.4%		Texas	22.5%
Arizona	56.8%		Minnesota	23.4%
Wisconsin	58.1%		New Mexico	24.3%
Arkansas	58.1%		Indiana	27.9%
Alaska	66.2%		Arkansas	27.9%
Kentucky	71.5%		South Dakota	29.3%
Louisiana	77.1%		Arizona	32.2%
Georgia	80.3%		Nevada	34.4%

Appendix 10: Associate Degrees and Long Term Certificates Per Population, Ranked by State, Community Colleges Only, 2007-08

Associate Degrees per 10,000			Long-term Certificates per 10,000			Associate Degrees and Long Term Certificates per 10,000	
Alaska	0.3		Connecticut	0.1		Alaska	0.5
Nevada	1.7		Vermont	0.1		Nevada	2.6
Louisiana	6.2		Alaska	0.1		Vermont	7.4
Vermont	7.3		New Hampshire	0.7		Idaho	9.2
Idaho	7.7		New Jersey	0.7		Pennsylvania	10.5
Indiana	7.9		Tennessee	0.7		Connecticut	11.1
Georgia	8.3		Oklahoma	0.8		Indiana	11.4
Pennsylvania	9.5		New York	0.9		Tennessee	11.9
Montana	10.5		Nevada	1.0		New Hampshire	11.9
Rhode Island	10.9		Pennsylvania	1.0		Rhode Island	12.0
Connecticut	11.0		Rhode Island	1.1		Montana	12.7
Colorado	11.1		Massachusetts	1.3		Colorado	13.8
Tennessee	11.1		Florida	1.4		Massachusetts	14.1
New Hampshire	11.2		Idaho	1.5		West Virginia	14.3
West Virginia	11.3		Hawaii	1.7		Ohio	14.7
Maine	12.2		Virginia	1.9		Maine	14.8
Delaware	12.4		Ohio	2.0		Louisiana	15.4
Ohio	12.7		Montana	2.2		Missouri	16.7
Massachusetts	12.8		Missouri	2.3		Virginia	17.1
Utah	13.7		Maine	2.7		New Jersey	17.1
Arkansas	14.4		Colorado	2.7		Florida	17.2
Missouri	14.4		West Virginia	3.0		Delaware	17.2
Alabama	14.9		South Carolina	3.2		Utah	17.4
South Dakota	15.0		Indiana	3.5		Georgia	17.9
South Carolina	15.1		Utah	3.7		New York	18.0
Kentucky	15.2		Oregon	3.7		South Carolina	18.3
Virginia	15.2		California	3.8		Hawaii	18.5
Texas	15.3		Michigan	4.0		Alabama	19.0
Florida	15.7		Alabama	4.1		Oklahoma	19.8
New Jersey	16.4		National Average	4.1		Kentucky	20.6
National Average	16.5		Illinois	4.4		National Average	20.6
Wisconsin	16.5		Maryland	4.4		Texas	21.1
Hawaii	16.8		North Carolina	4.8		Maryland	21.6
New York	17.0		Delaware	4.9		Oregon	21.6
Maryland	17.2		North Dakota	5.4		South Dakota	21.7
Oregon	17.9		Kentucky	5.4		Arkansas	21.8
Arizona	18.5		Nebraska	5.5		Michigan	23.1
Oklahoma	19.0		Texas	5.8		North Carolina	24.0
Michigan	19.1		Washington	5.9		Illinois	24.3
North Carolina	19.1		Kansas	6.2		Wisconsin	24.3
Illinois	19.9		South Dakota	6.7		California	26.1
New Mexico	21.8		Arkansas	7.5		Nebraska	28.5
California	22.3		Mississippi	7.6		Kansas	30.1
Nebraska	23.0		Wisconsin	7.7		New Mexico	30.1
Minnesota	23.0		Wyoming	7.9		Washington	32.0
Kansas	23.9		New Mexico	8.3		North Dakota	33.4
Washington	26.1		Louisiana	9.2		Minnesota	33.4
Mississippi	27.8		Georgia	9.7		Mississippi	35.3
North Dakota	28.0		Minnesota	10.4		Arizona	35.6
Iowa	35.1		Iowa	10.6		Iowa	45.8
Wyoming	39.2		Arizona	17.1		Wyoming	47.0